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Personality structure in east and west Africa: Lexical studies of personality in Maa and Supyire-Senufo

Thalmayer, Amber Gayle ; Saucier, Gerard ; Ole-Kotikash, Leonard ; Payne, Doris

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Personality Structure in East and West Africa:
Lexical studies of Personality in Maa and Supyire-Senufo

Amber Gayle Thalmayer
University of Lausanne

Gerard Saucier
University of Oregon

Leonard Ole-Kotikash
Ngong, Kenya

Doris Payne
University of Oregon

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Correspondence regarding this article should be addressed to: Amber Gayle Thalmayer, Institute of Psychology, University of Lausanne, Géopolis, Bureau 4218, 1015 Lausanne, Switzerland, +41 (0)21 692 32 58, ambergayle@gmail.com.

Abstract

The field of psychology relies heavily on evidence from North America and Northern Europe. Universally-applicable models require input from around the globe. Indigenous lexical studies of personality, which define the most salient person-descriptive concepts and their structure in a population, provide this. Such results are reported from two non-industrialized communities, representing two of the three main language families of Africa, in groups with differing cultural characteristics. Maasai participants, traditionally herders in rural Kenya and Tanzania, have a highly-structured, traditional culture. Supyire-Senufo participants are traditional horticulturalists in Mali. The 203 most common person-descriptive terms in Maasai were administered to 166 participants, who described 320 persons (166 highly-regarded, 154 less so). The optimal emic solution included 5 factors: virtue/moral-character, debilitation/vulnerability, boldness/surgency, hubris/pride, timidity. In the Maasai context, descriptions of well-regarded individuals were exceptionally uniform, suggesting the role of personality language in norm socialization in tight, traditional cultures. In Supyire, 115 participants used 208 person-descriptive terms to describe 227 targets (half highly-regarded). The optimal emic solution included 10 factors: social self-regulation, well-being, vitality/resilience, broadmindedness, diligence versus laziness, madness, stubbornness versus attractiveness, acceptance versus discontent, hurry/worry, peacefulness. The best convergence between the languages was at the three-factor level, where factors relate to moral character, low agreeableness coupled with high extraversion, and emotional stability. Beginning with the four-factor level, content related to local cultural characteristics became apparent. In both languages, two-factor solutions matched the Big Two, but three-, five-, and six-factor solutions failed to overlap with etic Pan-Cultural Three, Big Five, or Big Six models.

Keywords: Lexical studies; psycholexical approach; Africa; emic etic approaches; personality structure

Personality Structure in East and West Africa:

Lexical studies of Personality in Maa and Supyire-Senufo

Because humans live and work closely with each other everywhere, it could be said that dealing with other people is a human universal (Dixon, 1982; Heine & Buchtel, 2009). We need to understand each other. Who can you trust? Who's good at valued tasks? What is this person like to live or work with? A universal need to understand others has led people to develop various systems, from astrology in ancient China, to the humors of ancient Greece, to the popular Big Five model developed by contemporary personality psychologists. But although psychology is the study of human beings in general, current knowledge and models are based disproportionately on evidence from Western, industrialized nations, which include only about 12% of the world's population (Arnett, 2008; Heinrich, Heine & Norenzayan, 2010). More generalizable models would require input from around the globe. While Africa is the second most populous continent (Statistica, 2017), few models, theories, and measurement instruments have been meaningfully informed by evidence from African groups (e.g. Rossier, Ouedraogo, & Dahourou, 2017). Knowledge of which attributes are universal versus culturally specific is necessary in order to eliminate cultural bias in measurement, and to appropriately facilitate cross-cultural research without imperialistically imposing models best suited to a non-globally-representative (e.g., Western) context.

Cheung, van de Vijver, and Leong (2011) weigh the advantages of translating measures of personality for use in new cultures, an *etic* approach, versus building new models from the bottom up, an *emic* approach. Etic studies allow existing models to be tested for cross cultural applicability. But importing methods to a new place can be problematic for many reasons, for example varying reference group effects (e.g. Heine, Lehman, Peng, & Greeholtz, 2002) and

differing experience responding to surveys. Perhaps most importantly, the etic approach precludes identifying locally relevant concepts and dimensions in the new culture, which are not represented in the etic measure. A review of the use of Western-derived personality inventories in French-speaking Africa (Rossier et al., 2017), for example, reported some degree of applicability, and Thalmayer and Saucier (2014) developed a relatively cross-culturally generalizable version of the Questionnaire Big Six and a related Big Five measure. Such studies can provide information about the least translatable items and dimensions, for example, reporting that content from the openness/intellect factor of the Big Five was generally missing from local lexicons in French-speaking Africa (Rossier et al., 2017). But they cannot provide insight into local content missing from the etic measures. Emic studies, on the other hand, can provide rich detail about local views, but may fail to integrate local concepts into larger or existing models, thus unduly suggesting the uniqueness of closely related concepts that exist in other places under different names. For this reason, leaders in the field of cultural psychology (Cheng et al., 2011; Church & Katigbak, 1988) recommend that emic and etic approaches be integrated.

Indigenous lexical studies of personality are an excellent way to integrate emic discovery with quantitative etic comparison. Such studies are based on the rationale that the most useful distinctions between people in a given cultural context will be encoded in the natural language. This approach identifies the person-descriptive concepts most salient to a population by collecting terms from the natural language and then identifying their structure by analyzing how attributes group together. This allows personality researchers to move away from expert judgment in determining the selection of variables and structural models, instead basing models on objective evidence (Goldberg, 1981). Thus, lexical studies are well-suited to exploring the emic structure of personality comprehensively (although it is worth noting that the lack of terms

in a local lexicon for a trait does not mean that the trait does not exist in the population, only that it has less social importance locally; people in that cultural context have not tended to emphasize or communicate about it). Because the methodology is standardized, results can also be compared both descriptively and quantitatively across studies and languages. For example, terms in the lexical survey that fit into etic, existing structural models can be identified or included with the lexical items in surveys to create marker scales. These etic scales can then be correlated with emic dimensions to quantify the degree of overlap. Furthermore, this potential for comparison across accumulated lexical evidence from diverse languages offers a powerful means of assessing universal versus culturally specific aspects of psychological variation. As Goldberg (1981) argued, “the more important is an individual difference in human transactions, the more languages will have a term for it” (p. 142).

Here, results are reported from studies in two non-industrialized communities in Africa with diverse characteristics. Maasai participants, traditionally herders in rural Kenya and Tanzania, have a highly-structured, traditional culture. The Maasai are a widely recognized group due to their distinctive style of dress, their geographical location in east African safari country, their reputation for endurance and warriorhood (Olson, 1996), and their largely successful preservation of a traditional way of life. There are approximately 900,000 speakers of Maa (Oparanya, 2010), the language of the Maasai, living primarily in the Greater Rift Valley (Olson, 1996), divided by the border between Kenya and Tanzania. The language is one of a group of Nilotic languages, a sub-group of the Nilo-Saharan languages, a family whose speakers inhabit the savannah and semi-arid lands south of the Sahara, extending west, east, and south from Chad and Sudan. The Maasai are known as cattle-herders, although they also keep goats and sheep. They have traditionally engaged in very little farming. Maasai typically practice both

traditional (quite monotheistic) religion and Christianity (Catholic or Protestant, often depending on region).

The Maasai are an ideal group to include in psychological studies for several reasons. For one, they represent a traditional African society that has preserved itself well in face of Westernizing pressures. The Maasai appear to be highly collectivist (Ma & Schoeneman, 1997), by some measures more so than east Asians, the groups often drawn on for contrast to the individualistic west. Previous work has also indicated high mean levels of subjective well-being in the group (Biswas-Diener, Vitterso, & Diener, 2005), an indication that Maasai culture is not just traditional but well-functioning.

Supyire-Senufo participants are traditional horticulturalists in the Sikasso region, in the southeastern portion of Mali (West Africa). Supyire is one of three languages in the larger Senufo language group, of the Gur branch of the Niger-Congo language family (Carlson, 1994). The Senufo group includes about 3 million speakers in the Middle Volta region (Olson, 1996) now within the boundaries of Mali, the Ivory Coast, and Burkina Faso (Shoup, 2011). This group forms a helpful contrast to the Maasai, because traditionally they have a different, horticultural lifestyle, raising crops such as millet, yams, and sorghum, and sometimes keeping chickens, but rarely other animals. Senufo groups often include artisan/craftspeople (Richter, 1980), who became well known to art dealers early in Western contact for their ceremonial masks (Shoup, 2011) but the Supyire subgroup are primarily farmers and laborers (https://en.wikipedia.org/wiki/Supyire_language). According to Shoup (2011), about half the Senufo population has converted to Islam, while others practice traditional religions; Imperato and Imperato (2008) describe the Senufo as primarily animist. In the area where data were collected, local consultants (the two collaborators from SIL) described villages as varying in

primary religious affiliation, with some being predominantly Muslim, others Christian, and others practicing African traditional religion. They also described Senufo society as being highly gender-segregated with respect to friendships and professional relationships – men associate almost exclusively with other men and women with women (this is also true of Maasai society).

Lexical studies, the Big Five, and related structural models

The lexical strategy for studying personality was proposed as early as the late 19th century (Galton, 1884) and was first attempted in the 1930s (Allport & Odbert, 1936). The procedure of lexical studies is transferable to any language with a written lexicon. The four basic steps include: (1) extract all terms used to describe psychological differences between people from a comprehensive lexicon; (2) reduce the list to a tractable number by removing direct synonyms and terms that are not commonly used, per frequency ratings by native speakers; (3) administer in inventory form to participants, asking them how well each term describes a target (the self or a peer); and (4) use factor analysis to determine which terms group together to form dimensions, and which of these dimensions best distinguish among individuals in the sample.

Convergences in the results of lexical studies using a combination of self- and peer-rating in English (Goldberg, 1990), German (Ostendorf, 1990) and Dutch (De Raad, Henriks, & Hofstee, 1992) as well as factor-analytic studies of temperament and personality scales, led to the prominent Big Five model of personality (extraversion, emotional stability versus neuroticism, conscientiousness, agreeableness, and intellect/openness to experience; Saucier & Goldberg, 1996). The Big Five appeared to replicate in subsequent lexical studies in Polish (Szarota, 1996) and Czech (Hrebickova, 1995), with some deviation in the emotional stability factor in both cases (Saucier & Goldberg, 2001). The model was later replicated in Turkish after new criteria

were applied to a previous attempt (Saucier & Goldberg, 2001), and in Croatian (Mlacic & Ostendorf, 2005), with some variation in emotional stability and agreeableness factors.

This degree of consensus has been highly generative for the field of personality psychology, and many meaningful relations have been established between scores on the five factors and important life outcomes (e.g. Ozer & Benet-Martínez, 2006). Lexical studies of personality completed in languages increasingly either culturally and/or linguistically distant from the original three, however, are more equivocal about the universality of the Big Five (Ashton et al., 2004; Saucier, 2009a). Emic studies in Italian (De Raad, DiBlas, & Perugini, 1998), Hungarian (Szirmak & De Raad, 1994), Greek (Saucier, Georgiades, Tsaousis, & Goldberg, 2005) and Chinese (Zhou, Saucier, Gao, & Liu, 2009) have not found the Big Five in emic five-factor solutions. Instead, the addition of a sixth factor, including content related to integrity versus taking advantage of others, was proposed by Ashton et al. (2004) as providing more consistent convergence between the studies in Dutch, German, Hungarian, Italian, and Polish, plus French (Boies et al., 2001) and Korean (Hahn, Lee, & Ashton, 1999). This model also includes small differences in other factors, with extraversion emphasizing sociability, agreeableness emphasizing even-temper versus irritability, and emotional stability emphasizing self-confidence and toughness versus emotional vulnerability. This six-factor proposal was supported by Saucier (2009a) in a sample of lexical studies using a wider selection of attributes and going further beyond Europe, including the Chinese, English, Greek, and Turkish studies mentioned above, plus Spanish (Benet-Martínez & Waller, 1997), Hebrew (Almagor, Tellegen, & Waller, 1995), and Filipino (Church, Reyes, Katigbak, & Grimm, 1997; Church, Katigbak, & Reyes, 1998).

Comparison of two-factor results from an even more globally diverse sample of studies was seen to support a “Big Two” model, with factors of social self-regulation and dynamism (Saucier, et al., 2014b). Alternatively, De Raad and colleagues (2014) jointly analyzed lexical data from ten European languages plus Filipino, and identified a three-factor solution with dimensions summarized as dynamism, affiliation, and order as the core of the taxonomies. These alternative models have several distinct advantages over the currently popular Big-Five framework. Their parsimony may increase their tractability for being accounted for theoretically. They are more cross-culturally generalizable, and such generalizability could indicate either a genetic or biological basis for the attributes included, or their basis in universal non-biological features characterizing human social environments (Saucier, 2009b).

No lexical studies from sub-Saharan Africa have yet been published, despite that fact that Africa is home to a substantial portion of the world’s population and nearly a third of all living languages (Simons & Fennig, 2017). An extensive recent emic/etic project led to a personality measure and model specifically developed for South Africa (Nel et al., 2012; Fetajadiv et al., 2016). A similar study was conducted in Arabic in the Levant (Zeinoun, Daouk-Öyry, Choueiri, & Van de Vijver, 2017). In both cases, local models were found to include more dimensions than the Big Five, but to include most Big Five content. These results provide important indications about locally relevant content. Creating locally-adapted measures also facilitates subsequent studies to explore personality correlates and dynamics with valid and reliable scales. However, formal lexical studies are important to allow for the building of emic models and the testing of etic ones using an established and tested methodology across highly diverse contexts. Lexical studies allow for a reasonably direct comparison of the emergent most-frequently-used content and its structure across groups, in order to address questions of universal versus culturally

specific personality content and structure. This study provides the first such evidence from the continent that is the origin-place of modern humans, and which remains the home of a rich diversity of cultures and languages. This project thus provides a preliminary test of the extent to which a universal taxonomy of personality descriptors exists.

Identifying a Robust, Maximally Informative Emic Structure in Personality Descriptors

From their inception in the late 1980s, lexical studies of personality descriptors settled on a conventional methodological formula. This formula includes several variable-selection steps: (a) go through a dictionary extracting individual-difference-denoting words of any type, but (b) turn attention mainly to adjectives, and (c) within the adjective-class exclude terms that might be classified as either highly evaluative or referencing psychological states, leaving a fairly narrow set of trait-descriptive adjectives for primary consideration, sometimes also restricted to those most frequently used. For data collection, the formula has been to (d) emphasize self-reports, even if peer-ratings are sometimes also elicited, and (e) obtain data mainly or entirely from college students. The conventional data-analysis approach has involved (f) ipsatization of data, and (g) principal components analysis with varimax rotation, with (h) extraction of roughly five or six factors, the expected outcome on the grounds that one would wish to see if the Big Five (or Six) can be replicated.

This conventional formula may be reasonable, but it is also arbitrary in some ways. Variant procedures at most of these steps could be equally justifiable. For example, in some language-communities, there are few or no college students, adjectives may not be the main word-form for describing attributes of persons, and self-reports may be unusual and awkward for respondents. Moreover, varimax rotation may tend to yield fewer interpretable, sufficiently sized

factors than some other methods, and there is no reason to assume that each language has roughly five or six useful dimensions.

Indeed, recent work in the field of personality psychology has argued for the value of more elaborated models. While the Big Five is a very useful overarching model, the five factors can each be decomposed into multiple facets that have more predictive power when disaggregated (Mottus, 2016; Asendorpf, 2016). Saucier and Iurino (2019) recently demonstrated that going beyond the conventional methodology can allow factor analyses of single descriptors to provide much more elaborated models. Re-analyzing Goldberg's classic lexical-study data that has been cited thousands of times in support of the Big Five, they found evidence for 20 relatively independent factors in English-language adjectives, factors that are fairly robust and unambiguously superior for purposes of prediction.

Here we present results that indicate how the conventional methodological formula would fare with lexical-study data from Africa, using methods, for example the interview format, that better fit a non-European-language context. The analysis approach then goes beyond conventional methods, in order to yield indications of more informative emic models of personality variation, seeking the maximum number of interpretable factors.

Goals for the Present Study

Here, the results of two lexical studies conducted in two of the three main language families of Africa are reported, with the aim of meaningfully broadening the base of information on personality language and structure. These lexical studies provide insight into the most locally useful psychological distinctions made between people in societies outside the "mainstream" minority that dominates current knowledge in psychology. Comparing such information to what has been reported for languages from other parts of the world, predominantly in Europe, now

also with increasing input from languages and samples in Asia, helps us broaden our understanding of personality in general, and better define what aspects of our popular models are universal and which are specific to certain Western cultures.

Previous lexical studies have mostly relied on self-report, a methodology well-suited to “WEIRD” settings (Western, educated persons in industrialized, rich, democratic societies; Heinrich, Heine, & Norenzayan, 2010) where people are accustomed to characterizing themselves and celebrating their uniqueness. In more traditional settings, individuals are rarely asked to describe their own qualities; instead personality and character attributes are used almost exclusively when talking about others (Bailey, 1971; Brison, 1992; Haviland, 1977). In such settings there is less emphasis on defining the unique attributes of a “private self” (Triandis, 1989). Peer-ratings of well-known others is a method more generalizable across cultural settings. Luckily, previous work in the West suggests that self- and peer- ratings lead to similar structures (e.g. Goldberg, 1990).

Previous lexical studies have relied almost exclusively on university students as their samples (e.g. all the studies used in De Raad et al., 2014; Saucier, 2009a; and Ashton et al., 2004, with the exception of Saucier, 1997). This habit of convenience in personality and social psychology is pervasive: of all samples used in articles published over a recent five-year period in the *Journal of Personality and Social Psychology*, 67% of American samples and 80% of those from other countries were seen to consist of undergraduate students (Arnett, 2008). We avoided this in the current studies, instead establishing more representative samples of language-speakers by seeking adult participants from many different villages across the areas in question.

The first goal in each of the two lexical studies was to define the optimal emic (indigenous) structure of character and personality terms. An initial comprehensive list of person

descriptors in each language was refined to a usable number with frequency-of-use ratings from native speakers; the shortened list was administered as a survey to local native speakers who were asked to describe a well-known other; and analyses assessed the optimal emic structure using an approach defined by Saucier and Iurino (2019) to maximize model elaboration. A more conventional lexical analysis approach was used, however, to create factors for comparison with marker scales representing etic Big Two, Pan-Cultural Three, Big Five and Big Six models, to assess the degree of replication of these models in cultural contexts highly different from those typically studied. This allows for an initial test of the extent to which there is a universal taxonomy of personality descriptors (which a position of extreme cultural relativism might deny). Finally, commonalities between the results in these two language-communities -- widely-separated in terms of geography, language, and livelihood -- are discussed, to develop hypotheses for basic dimensions of inter-individual variation in other traditional societies in Africa.

Study 1: The Structure of Personality and Character Attributes in Maa Method

Both studies reported were reviewed by the research ethics committee of the Oregon Research Institute (at the request of the second author) and were declared exempt because they found that no risk was posed to participants, due to the anonymous nature of the research and the lack of any self-report or personal questions. A previous article, Saucier, and colleagues (2014b) examined two-factor outputs from the data in the two studies reported here for comparison with those from seven other languages, but used a different analysis approach.

Materials. A survey of 211 Maa terms was printed on two pages. One page consisted of 106 verbs, the other page included sets of 41 adjectives, 35 attribute nouns, and 28 type-nouns.

Roughly half the participants were administered the terms in each of the two orderings of these pages.

Creation of the lexical survey. Identifying terms for the survey started with a comprehensive dictionary of the Maa language with English glosses compiled by Payne and Kotikash (2003), following the procedure outlined by Angleitner, Ostendorf, and John (1990). The second author and a doctoral student in psychology extracted all terms whose English gloss, in the judgment of either, could be used to distinguish the behavior or psychology of one individual from another: to characterize a person, say what they are like, or convey their qualities at one moment or in general. Terms were excluded that (a) are nondistinctive and apply to all people (e.g., breathing, human), (b) refer to geographic origin or nationality, (c) can refer only to part of a person (e.g., eyes), (d) have only metaphorical personality implications (e.g., mouse), or (e) refer to professional or job-related identities or a social status or honors. In Maa, unlike in English, attributes of persons are often described through verbs stems, for example, *lúbo* ‘be greedy’, or their relativized forms like *o-lúbo* ‘who is greedy’ which can be used as modifiers within noun phrases. For this reason, the process was not restricted to adjectives. The initial process resulted in a list of 779 total terms.

To reduce the 779 terms to a tractable list of around 200, the initial ratings on frequency-of-use for describing a person were obtained from four native speakers of Maa, two men and two women, conversant with the central dialect of the language, the form most intelligible across Maasai areas in Kenya. Raters indicated perceived frequency of use for each term on a 1 (extremely rarely) to 5 (extremely often) scale, with the midpoint being “sometimes but not often.” This allowed us to eliminate terms that had the same word-root and essential meaning as a term higher on the list (as in *cynic* and *cynical* in English), and terms that would be awkward

for characterizing a person because they characterize only a behavior. By an iterative process, taking the most frequently used terms, but omitting a few because they were determined by a linguist and a native speaker to not be used for describing people or overly awkward or unusual for doing so, and in a few cases changing the word-form of a root term to make it more useable, the second and third authors arrived at a set of 203 terms.

Eight terms added to the survey to assess demographic characteristics, to aid the creation of maker scales, or to address other questions relevant to cultural psychology, were not included in emic analyses. A term representing imaginative ability was included for the openness/intellect marker scale given the lack of frequently used terms from this domain. Other added terms, to allow for the exploration of other questions or to potentially parse results, asked about attractiveness, modern-ness, being Maasai, and about the target's sex.

The six-point Likert scale was translated with an effort to adapt it to a way in which Maasai people distinguish degrees of aptness, including *áa* (no), *majó* (a bit), *mmê olêη* (sometimes yes, sometimes no), *kájo* (for the most part), *eé* (yes), and the emphatic *eé olêη* (most decidedly so). Each point on this scale was represented by a picture conveying an increasing quantity with water higher and higher in a bucket.

Participants. One hundred and sixty-six native speakers of Maa from relatively rural and traditional areas generally in the vicinity of the towns of Narok and Kajiado in the Rift Valley province in Kenya completed the survey by interview. These participants lived in patrilineally organized villages and were engaged in livestock herding in a traditional manner. Two participants – one man and one woman – were recruited from each village. Participants were compensated in most cases by gifts of tea and sugar, frequently used commodities in these areas.

Procedure. The interview and the preliminaries regarding informed consent and instructions were conducted entirely in Maa. Because virtually all participants were non-literate – the Maa language has only recently been put into written form – the survey was filled out by the field interviewer (the third author) based on the oral responses of participants. Informed consent was sought and received verbally, with a script read by the interviewer. Only Maasai individuals, no Westerners, were present for data-collection.

Each participant was asked to bring to mind a real person whom they knew well and thought highly of, and with this person in mind to respond to the 211 single-word descriptors, indicating how well each term applied to that person. At the completion of the task, if the participant was still willing and available, they were asked to think of a different, second real person, whom the participant knew well and did not think as highly of as the first. With this second person in mind, the procedure was repeated. All but 12 participants were able to complete descriptions of two persons, so that the data set consists of descriptions of 166 admired persons and 154 less-admired persons. An advantage of the interview format was that we had no missing data for the 320 descriptions.

Analyses. *Finalizing lists of terms for analyses.* Following Saucier (1997), initial item selection was very broad, including terms that describe primarily physical differences between individuals. This strategy was used in order to be agnostic about which terms are psychological, and based on the assumption that terms with solely physical ramifications would be likely to form their own factors and not interfere with emergence of psychological dimensions. However, given the small samples sizes, small variable lists were deemed to be preferable for data-analytic reasons. Furthermore, we considered that deviation in results from previous lexical studies might be attributed to differences in variable selection. Thus, a panel of five judges, undergraduate

research assistants, assessed the 203 terms administered using procedures drawn from previous lexical studies to select terms for the current analyses. The two systems were termed “Dutch” and “German” (DeRaad, Di Blas, & Perugini, 1998). In the Dutch system, adapted from that described by Szimark and DeRaad (1994), terms were rated for pertinence to describing personality as the term is usually applied, i.e., “a distinguishing quality or characteristic, typically one belonging to a person” on a scale from 0 (not at all) to 5 (very). Interrater reliability was high (Cronbach alpha = .89). For the “German” system, per Angleitner, Ostendorf, & John (1990), raters categorized terms into 13 subcategories within five broader categories of person-descriptors (dispositions, temporary conditions, social and reputational aspects, overt characteristics and appearance, and terms of limited utility). Coefficient alpha values for the categories ranged from .24 to .96, and for the broader categories from .55 to .80 (values shown in supplemental Table S1¹). Overall Fleiss Kappa for this system was .39.

The Dutch system was deemed more appropriate to the current data. The German system has previously been used only with native speakers categorizing single terms. In this case, however, English speakers rated or categorized what were typically multiple-word glosses for single terms in Maa or Supyire. In the Dutch system, multiple-word glosses could be summarized -- if of four words only two were relevant, the rater could take this into consideration. In the “German” system, however, multiple glosses might belong to different categories, leading to a lack of agreement depending on which aspect was given preeminence. For example, the Maa term *o-siná*, translated as ‘poverty, difficulty, problems’, was placed by three raters into subcategories of “social and reputational aspects”, by another into “temporary

¹ The data, syntax used for analyses, and copies of the original surveys administered are available via this link to an Open Science Framework repository: <https://osf.io/x79qz/>

conditions”, and by another into “un-categorizable”. On the single numerical rating, however, four raters gave it 0, and the other 1, a more straightforward consensus. Thus, the Dutch ratings were used in subsequent steps to determine the following two reduced lists of terms.

The 169-term “psychological, broad” list included all terms with an average rating of 0.5 or higher. This indicated that at least half of the raters found it at least slightly pertinent to personality. Only terms that a majority of raters found “not at all” pertinent were removed. The 111-term “psychological, narrow” list included only terms with an average rating of 2 or higher, indicating that it was on average considered at least “moderately pertinent”.

Principal component analysis to determine optimal emic solution. Data analysis began with ipsatized data, pooled target samples, and the broad psychological variable selection and followed a series of steps to determine the optimal emic solution:

1. We used parallel analysis (O’Conner, 2000) and Velicier’s MAP test to determine the maximum potential number of factors, given patterns in the data.
2. Starting with this maximum number of factors, we generated three candidate models by running principal components analyses in SPSS version 22 for Mac with three rotations: varimax, equamax, oblimin (delta=0). For each rotation strategy, we examined results and worked down to the solution that had the maximum number of interpretable factors, excluding models with factors of fewer than two salient variables (those with their highest loading on that factor) or with otherwise uninterpretable factors.
3. We compared the three candidate models for robustness across four method variations as a form of ‘sensitivity analysis’. These four method variations included: raw vs. ipsatized data, broad versus narrow variable selection, pooled versus less admired only targets, and orthogonal versus oblique rotation. For each candidate model, there were therefore four

comparisons made, the first three via canonical-correlation analyses between sets of saved factor scores. For the orthogonal-oblique comparisons, because solutions were rotations of each other, we used correlations of factor scores, after matching pairs of factors by running a PCA with the factors of both models to determine the best matches.

Of the four method-variations explored, we gave *a priori* preference to structures based on ipsatized data, pooled-target samples, and the broad psychological variable selection. Our use of alternatives (raw data, a narrower variable selection, less-admired-only targets) was to test the extent to which identified structures generalized beyond these preferences. In contrast, we had no *a priori* favoring among the three rotation methods, therefore we developed candidate models based on each, and then examined the degree of generalizability if that method was varied (between orthogonal and oblique), assuming that structures generalizing across rotation method (i.e., in exact factor-axis positions) would be preferable. The basis for our *a priori* preferences were as follows. Ipsatization has generally been used in lexical studies as a simple way of managing response biases, often leading to more interpretable results because individual differences in general tendency to agree or disagree (acquiescence) is removed, as is difference in extreme vs. middle usage of the response scale (e.g. Heine, 2016). The pooled-target samples were preferable because they allowed for more adequate sample sizes. And the broad selection of variables was the reasonable medium, between the full lexical list that included many physical descriptors, and the narrow list, which stood out for being unusually short compared to other lexical studies.

For comparison with etic scales, factor scores for solutions containing specific numbers of factors (1, 2, 3, 5, and 6) were obtained. In this case, to enhance comparability given the norms established in lexical studies and thus to match the derivation-sources of the lists of

adjectives used for marker scales, we used ipsatized data and varimax rotation. Again we relied on the broad psychological variable selection. Because of unusual response patterns in the Maasai admired sample (described below in results), we also restricted these models to the less-admired-only sample, again a better match to the derivation-context of the etic factors. Following Ostendorf's influential work (1990, Table 61, p. 93), where mean correlations over .70 between emic German factors and the Big Five scales was used to show that the model replicated, we used a criterion of correlation greater than or equal to .70. This means logically that half their variance is shared, to qualify as having significant correspondence.

Marker scales. Marker items for etic scales were selected, from among the variables administered, prior to analyses and were scored as scales. Maa terms in the marker sets representing these factors (3 to 15 terms per factor) are detailed in supplemental Table S2. The sets of descriptors assign roughly equal numbers of terms-per-factor within each model. For each of the terms identified as representatives of the structures described below, a search was made through this corpus by word-root, so an entry could be counted regardless of whether it was adjective, noun, or verb.

Big Two. Terms came from the list provided in Saucier and colleagues' Table 2 (2014b). However, as Maa and Supyire data were used in those analyses, new lists were reconstructed without the input from these two languages. Using the same criteria, including a term that appeared in a majority of the other seven languages, this led to no items being removed from the lists, but several added, as detailed in the table.

Pan-cultural Three. De Raad et al. (2014) jointly analyzed lexical data from eleven languages and identified a three-factor solution with dimensions summarized as affiliation (including affective and altruistic connotations), dynamism (being extraverted, energetic, active,

enterprising), and order (being systematic, organized, capable, rational, decisive). We used their lists of the 25–35 highest loading items on each of the component poles (De Raad et al., 2014, Table 6).

Big Five. Two sets of Big Five terms were used. A seven-language, cross-cultural composite of conceptions defining the core of each Big Five factor was derived from Table 2 of De Raad, Perugini, Hrebícková, and Szarota (1998), who compare five-factor structures in seven languages, and present 16 adjectives for each factor in each language. Of these 16 terms per factor, five to 12 total were identified as salient for the same factor in at least three of the seven languages by Saucier, Thalmayer, and Bel-Bahar (2014a, Appendix B). These were used as search terms here, as reported in supplemental Table S2. Another commonly used representation of the Big Five in adjective form is the 100 adjectives selected by Goldberg (1992; later abbreviated by Saucier, 1994) from studies with the English lexicon, which forms the basis for International Personality Item Pool (IPIP) measures of the Big Five (Goldberg et al., 2006). Supplemental Table S2 includes the 85 of these adjectives with non-redundant word-roots. Note that in Goldberg’s representation, agreeableness emphasizes warmth and sympathy, whereas the cross-language version emphasizes peacefulness versus aggressive dominance.

Big Six. Six-factor structures have been derived from lexical studies using relatively narrow selections of personality variables (Ashton et al., 2004), represented in the HEXACO inventories, and from those using relatively broad selections (Saucier, 2009a) represented in the Questionnaire Big Six inventories (QB6; Thalmayer, Saucier, & Eigenhuis, 2011). The HEXACO structure is based on “cross-language six (CL6)” adjectives identified on each factor in at least three of eight studies analyzed by Ashton et al. (2004), as shown by Saucier (2009a, Table 1). The “wide variable selection cross-language six (WCL6)” adjectives in supplemental

Table S2 are those identified in at least two of the eight studies considered by Saucier (2009a, Table 4).

Results

Response patterns. Response patterns in this study were distinctive. Although the team went to great lengths to create a multipoint rating scale applicable to the Maasai context, most participants relied exclusively on two points of the rating scale. Across all persons and descriptions, 52% of responses were “no”, and 46% “yes”. Thirty-eight percent of the cases included only these two responses.

Emic analyses. Analyses to identify the optimal emic structure proceeded as described above. According to parallel analysis (O'Connor, 2000) only 2 factors (ipsatized data, pooled targets, broad variable selection) had higher eigenvalues than would be expected by chance, but the MAP test (O'Connor, 2000) suggested a model with 10 factors. For comparison, among less-admired targets only, estimates were 6 or 11, and with the narrower variable list (all targets) 1 and 5, respectively. Analyses began with an outside maximum of 10 factors using each of the three rotation strategies in turn. The largest acceptable models, with all factors sufficiently sized and interpretable, included 5 factors using varimax rotation, 9 using equamax, and 5 using oblimin. As described above, each of these models was then correlated with 4 comparator models, changing a single method for each comparison: data, raw versus ipsatized; targets, pooled versus less-admired-only; variable list, broad versus narrow; rotation, orthogonal versus oblique. The average percentage of variance shared between sets of variables (based on the average squared correlations in the case of rotation changes) were .74 for the varimax model, .69 for equamax, and .78 for the oblimin model. Thus, interpretation proceeded with the more robust 5-factor oblimin rotation model, as it had proved least sensitive to variations in method.

The top-loading terms for the optimal emic solution are presented in Table 1 (the complete solution is provided in supplemental Table S3). The first factor includes a mix of terms describing virtue versus bad character, a general factor of evaluation in terms of Maasai cultural expectations, consistent with the general concept of social self-regulation (Saucier et al., 2014b). The third highest loading term, translated as ‘respect’ indicates a person who both has respect and is respectful. Anthropologist Michael Rainy described a similar word in the closely related Samburu language as indicating “a highly developed sense of the importance of reciprocal altruism”, and as representing a core value in the society (p. 792, 1989). ‘Deception, cheating’, the translation of the highest loading univocal term (one with a primary loading at least twice as large in magnitude as any cross-loading), captures the low end of this concept.

Note that this first oblique factor included the vast majority of the terms, and accounted for 70% of the variance, with subsequent factors accounting for only 1-2% each. Using less-admired only targets the variance accounted for by the first factor drops to 54%. With admired targets only (excluding three terms, ‘lazy’, ‘thief’, and ‘beastlike-character’, for which there was no variance, because every respondent gave the identical response ‘no’) the first factor only accounted for 15% of the variance. For the pooled sample, a first factor accounting for this much variance is extreme compared to previous lexical studies, however, we found that the results were interpretable. A factor-emergence table, indicating the content of and relations between factors from a single factor to the five-factor solution is presented in Figure 1.

The second factor includes various forms of debilitation and vulnerability. The opposite pole, including terms referring to well-being and leadership, indicates the negative view of such debilitation in Maa culture, and the perceived association of physical with psychological health. The third factor, boldness, includes courage and extraversion terms. The fourth factor includes

only two highest loading terms, but was determined to be interpretable in the Maasai context because it captures a contrast between power and youth. The third author, a Maasai consultant, described that young people may sometimes feel taken advantage of by their elders, who have the vast majority of power in their society. This factor may be specific to gerontocratic societies. Finally, the fifth factor, timidity, includes fear, shyness, and a term meaning poison or attractiveness, indicating the ambivalence assigned to attractiveness in societies with low relational mobility (Zhang & Li, 2014; this term loads secondarily, negatively on the third, ‘boldness’ factor.)

As an aid for interpreting these emic factors, their correlations with each other and the marker scales are provided in Table 2. Only the first and second factors were meaningfully correlated with each other (-.52). The correlations with etic scales show the first factor, followed by the second, to be heavily correlated with all the etic scales. This indicates the breadth of the initial factor, capturing the positive end of all the etic dimensions. It is also a product of the apparently highly evaluative emphasis in Maasai personality description, as noted above. The “less highly admired” targets were not intended to be disreputable people, only those who are not particular role-models. But in the Maasai context personality description, at least with the most frequently used vocabulary, operates with few neutral, non-evaluative terms, at least among this set of the most frequently used descriptors. This means that with the two sets of targets combined, almost all variance is absorbed by this first factor, because most of the variation is between those of the admired and those of the less admired groups. Thus, correlations derived from less admired targets only are also included in Table 2 to provide more discriminant information.

Because of the highly dichotomous nature of the raw data, with most responses either "yes" or "no," we compared the results to those with a polychoric correlation matrix obtained using the psych package in R (Revelle, 2018). This required using raw data, since ipsatization made the data more continuous. The results (available at the OSF link provided for study materials) were compared to the results of our emic model using raw data. While the polychoric results included first factors that were even more dominant, and later factors mostly include singleton highest-loading terms, secondary loadings were still quite high. Taking secondary loadings into account, the content of the domains using polychoric and using Pearson correlations in raw data were highly comparable. The main differences between models appear to stem from data type rather than correlation approach. We believe ipsatization to be the most appropriate choice for this data, however, as discussed above; it has also been the data option used in every lexical study so far published. While the results are not perfectly robust here between the raw and ipsatized data, we know from our series of systematic comparisons that we are presenting the model that is the most robust across these two types of data and the least sensitive to such method variations.

Relation to etic factors. Correlations between emic factors using less-admired targets only and varimax rotation, so as to better mimic the conditions under which these etic models were created, are presented in Table 3. Again, these reflect ipsatized data and the psychological-broad variable list; results with raw data are included in supplemental Table S4. Two rotated factors correlated substantially with the Big Two social self-regulation and dynamism marker scales, $-.71$ and $-.76$ respectively, for an average of $.74$. The average of the best match correlations for the Pan-Cultural Three model was $.45$, for the Big Five $.45$, and for the Big Six, $.41$. Thus, only the Big Two met the pre-set threshold for replication.

Discussion

The first goal of this lexical study was to define an optimal indigenous structure of character and personality. A comprehensive list of person descriptors in the Maa language was refined to a tractable number for administration by oral interview by using frequency-of-use ratings from native speakers. Responses to 211 terms were then collected from native speakers by an interviewer who sought one male and one female participant from each of over 80 separate villages, almost all of whom described both an admired and then a less admired person. Compared to other lexical studies of personality, including the study of Supyire, reported below, three unusual characteristics of the data stood out.

First, the vast majority of respondents relied heavily on only two of the six response options, “yes” and “no”. Secondly, descriptions of admired persons showed unusually little variance across participants. Of the 203 lexical terms, variances were smaller among the admired targets for 182. In the Maasai context, admired individuals appear to be seen more uniformly than less-admired individuals. Third, the pooling of admired and less-admired characteristics led to a dramatically large first factor in principal components analysis, accounting for 70% of the variance, whereas the corresponding percentage for admired-only targets was only 15%. This result is what would be expected in a sample of very heterogeneously evaluated targets – a sample including, essentially, saints and villains – where most of the action will be in the first, evaluative factor.

All of these results could be artefacts of unfamiliarity with Likert scales. Hypotheses for why respondents relied on yes and no could include a value for speed or economy in response, or reliance on the most frequently used, familiar words. Note that of the six response options, these two choices were the only ones of one-syllable, and are likely the most frequently used

expressions among the choices. However, Supyire-Senufo participants, equally unfamiliar with Likert scales, made use of the full range of options in a way analogous to that of samples from North America and Europe. The lack of variance specific to the description of admired persons suggests that these response patterns are related to cultural conditions. For example, the reliance on yes-and-no responses may indicate that personality and character are viewed in a primarily evaluative way. Perhaps respondents relate targets and terms to a strong evaluative schema, such that an admired person is seen as having all the good traits and none of the bad. Consistent with this possibility, there were three undesirable terms ('lazy', 'thief', 'beastlike-character') for which all responses were "no" for admired targets. In general, the Maa descriptors chosen for this study because they were rated as the most commonly used, appear to be highly evaluative terms, with clear valence. There are relatively few neutral terms here.

The fact that 166 respondents from over 80 villages would give such similar responses in describing an admired person reflects the strength of socializing influences of Maasai society. There is a highly specific way to be an admirable Maasai person, and the socialization process leaves no doubts in people's minds what that entails. Cultural anthropologist Christopher Boehm (1999) has proposed that in remote prehistory with hunting/gathering societies, the prime focus in the emergence of personality/character language was on promulgating moral rules and facilitating internalized social norms. In complex societies, which are often more lax about norm socialization, other dimensions can take on increasing strength. Though not hunting/gathering, Maasai culture may be a good example of a traditional language and culture in which personality language preserves this emphasis on socialization oriented around predominantly moral concepts. The most frequently used individual-difference terms almost all have a clear evaluative valence, and among these there is a dearth of terms indicating morally inconsequential attributes.

The dominant moral dimension, however, does not define the maximum emic dimensional structure. Following a series of steps to compare candidate models, a 5-dimensional structure using orthogonal rotation was chosen as the most robust across method variations. The factors were labeled virtue vs. bad character, debilitation vs. competence, boldness vs. introversion, guile versus powerlessness, and timidity. Finally, correlations with marker scales were used to test how well popular models developed in other linguistic and cultural contexts apply to the Maasai context. The dimensions of the Big Two model sufficiently replicated, but this was not so for any of the more differentiated structural models.

Study 2: The Structure of Personality and Character Attributes in Supyire-Senufo

Method

Materials. A survey of 216 Supyire-Senufo terms included 208 for the lexical study, plus eight additional terms not included in lexical analyses, printed on two pages. The page layout, divided into sections by word-type, and the response scale represented by a picture conveying an increasing quantity of water in a bucket matched that of the Maasai study, described above, although in this case a 5-point rather than 6-point scale was used. Again, roughly half the participants were administered the terms in each of two possible orderings of the pages.

Creation of the lexical survey. The procedure for identifying terms for the survey started with a comprehensive dictionary of the Supyire language with English glosses compiled by Carlson (2003), and following the steps and criteria described above for Study 1. This process resulted in a list of 381 total terms.

To reduce the 381 terms to a list of around 200, frequency-of-use (in describing a person) ratings were obtained from 11 native speakers of Supyire. In this case, all raters were male because the new status of Supyire-Senufo as a written language (schools generally use and teach

French) meant that there was a small pool of potential research assistants, all of whom were male. Raters indicated perceived frequency of use for each term on a 1 (extremely rarely) to 5 (extremely often) scale, with the midpoint being “sometimes but not often.” These ratings had good convergence (Cronbach alpha = .82). We then eliminated high-frequency terms that had the same word-root and essential meaning as a term higher on the list, and terms that would be awkward for characterizing an individual person as described above for Study 1. By an iterative process, the second author, working together with two collaborators from the Société Internationale de Linguistique (SIL) of Mali, arrived at the set of 208 high-frequency terms.

Eight terms were added to the survey to aid the construction of marker scales (indicators of openness and extraversion), and to explore demographic characteristics, including those indicating adherence to Christianity, Islam, or to African traditional religion, and an item about speaking French, an indicator of acculturation and education.

Participants. One hundred and fifteen native speakers of Supyire from rural areas engaged in horticulture in the vicinity of the village of Farakala completed the survey by interview. Generally two participants, one man and one woman, were recruited from each village. Participants were compensated by gifts of tea and sugar, as such gifts are generally considered more valuable than money in rural areas.

Procedure. Interviews were used for the same reasons and following the same procedure as that described for Study 1. Again, the interview and the preliminaries regarding informed consent and instructions was conducted entirely in the local language, with only local individuals present for data-collection. A total of 115 participants completed at least one rating, 113 completed two. Of these 228 responses, 17 were deemed problematic and were not included in

analyses, usually because a participant chose the same response for almost all items. The data set for analysis thus consists of descriptions of 104 admired persons and 107 less-admired persons.

Analyses. As described above for Study 1, ratings by the same 5 judges, undergraduate research assistants, were used to refine more specific lists. Interrater reliability for the single item rating of relevance to personality was high (Cronbach alpha = .90), whereas values on the five scales (Cronbach alpha .04 to .91, two incalculable) and 13 subscales (Cronbach alpha .04 to .79) of the German-system were lower (overall Fleiss Kappa = .40).

The 164-term “psychological, broad” list included all terms with an average rating on the single-item scale of .5 or higher on the rating scale. This indicated that at least half the raters found it at least slightly pertinent to personality; only terms that a majority of raters found not at all pertinent to personality were removed. The 108-term “psychological, narrow” list included all those terms with a rating of 2, indicating that it was “moderately pertinent”, or higher.

Data analyses followed the same steps described for Study 1. Marker items in the variable list for etic scales were selected prior to analyses using the word lists and the methodology described above for Study 1. The items used on the scales are listed in supplemental Table S2.

Results

Response patterns. Unlike in the Maa data, response patterns for Supyire appeared more similar to those seen in other lexical studies. While 43% of all responses were “no”, the other options were more equally used. Half of the cases included use of all 5 response options, and only 10 cases relied on just 2 response options. The first rotated factor (pooled data, broad variable selection) accounted for a more typical 26% of variance.

Emic analyses. In ipsatized data with pooled targets and broad variable selection, both parallel analyses (O'Connor, 2000) and MAP (O'Connor, 2000) suggested a model with 10 factors. Among less-admired targets only estimates were 9 and 6, respectively, and with the narrower variable list (all targets) 7 and 9. Thus, analyses began with a maximum of 10 factors using each of three rotation strategies. Interpretable models, with at least 2 highest loading terms in a factor that could be interpreted, included 10 factors for equamax and oblimin rotations and seven for varimax. As described above, each of these models was then correlated with four comparator models changing a single parameter: data, raw versus ipsatized; targets, pooled versus less admired; variable list, broad versus narrow; rotation, orthogonal versus oblique. The average proportion of shared variance between variable-sets (taking into account average squared correlations in the case of rotation changes) was .81 for the varimax model, .82 for equamax, and .89 for the oblimin model. Thus, interpretation proceeded with the oblimin-derived model, which had 10 factors.

The top-loading terms for the optimal emic solution are presented in Table 4 (the complete solution is provided in supplemental Table S5). The first factor is, as in Maa, a broad dimension of evaluation of moral character, consistent with the concept of social self-regulation (Saucier et al., 2014b), with the most univocal terms indicating attributes like disrespectful, unconstrained, and worthless. The second factor includes content one might associated with low agreeableness coupled with high extraversion – this factor seems to capture a lack of social harmony and accommodation, qualities highly valued in Senufo society. The highest loading and most univocal term translates as ‘always insisting they are right’, a person (further described by a native speaker consultant) as not easily accepting the suggestions or feedback of others. The third factor includes well-being content, including freedom from stress and anxiety. The fourth

factor, encompassing resilience and health even in the face of adversity, includes an interesting term originally translated as ‘discreet’. A local consultant explained that this term indicates the quality of not being open enough to others, and related it to a local proverb, "If you breathe your disease, you will have your medicine"; as he put it, “the health of one who has this quality can suffer an evil without being able to share it with someone” (T. Zanga, personal communications, May-June, 2018).

The fifth factor contrasts petty competitiveness with a more empathic, broadminded, and big-hearted perspective, perhaps from cosmopolitan life-experience. The sixth factor captures a kind of conscientiousness, self-regulation around tasks so that one is handling things intelligently. The seventh factor primarily includes content reflecting serious mental illness, with negative emotion terms (jealous, mistaken, suspicious) at the opposite pole. Discussion with a local consultant led us to suspect that these negative loadings have to do with a strong local dissociation between serious mental illness and any normal-range emotions. However, likely the specific loading of these particular emotions has to do with successive partialing, with these terms having residuals unaccounted for by the other factors, that happen to correlate with the factor.

The eighth factor terms suggest negative affect that is internalized, of a form that slows one down and makes one “contract”, whereas the ninth factor captures negative affect channeled in a more agitated, histrionic way. The tenth factor contrasts peacefulness with being a troublemaker who stirs up conflict.

The correlation of these factors to each other and to the etic scales, as an aid to interpretation, are provided in Table 5. Overall, the factors are not very intercorrelated, with no inter-factor correlations over .29. Here, unlike in Maa, emic factors relate more distinctly to etic

factors. For example the emic social self-regulation factor was correlated with the eponymous Big Two factor, and with affiliation, honesty, and agreeableness; the emic well-being factor correlated with Big Six resiliency; and the emic diligence/competence factor with Big Five and Six conscientiousness. Note that the emic madness factor is not meaningfully correlated with emotional stability -- as noted above, this factor appears to describe extreme mental illness including psychosis, and not normal-range emotional difficulties.

Relation to etic factors. Correlations between emic factors, extracted among less-admired targets only and using varimax rotation to better match the conditions under which the etic models were created, are presented in Table 6. Again, ipsatized data and the psychological-broad variable list were used; results with raw data are included in supplemental Tables S6 (less-admired target only) and S7 (all targets, in both ipsatized and raw data). Using the criterion of correlation greater than or equal to .70 as detailed for Study 1, we found that two rotated emic factors correlated substantially with Big Two social self-regulation (-.74) and dynamism (-.66) marker scales, for an average of .70. Best matches for three rotated factors with the Pan-Cultural Three averaged .56, despite a very strong match for affiliation (-.89). For the Big Five, there was a match of .60 for four of the dimensions, but the lack of a good match for openness/intellect, leading to an average of .49. For the Big Six the average was similar, at .45, despite a particularly strong match for honesty/propriety (-.89).²

Discussion

² We additionally used a Procrustes rotation protocol to compare the Pearson correlations to the target models (a matrix of 0s with 1, or -1 to identify the underlined correlation; R package 'paramap', O'Connor, 2018). The results are presented in supplemental Table S8. By a strict criterion (average congruences over .90) only the Big Two replicated in these results, and that only in Supyire. By a more lenient criterion (average congruences over .80; De Raad et al., 2010), the Big Two replicated in both samples, as well as the Big Three and Big Six in Supyire, with all other structures far below criterion. However, there was no structure that replicated (strictly) with all congruences over .90, and only the Big Two in Supyire had all congruences over .80.

The first goal of Study 2 was to define the optimal indigenous structure of character and personality in the Supyire-Senufo language used in southeastern Mali. A comprehensive list of person descriptors in Supyire was refined to a tractable number for administration by oral interview with frequency of use ratings from native speakers. Responses to 208 terms were then collected from local native speakers by an interviewer who sought one male and one female participant from each of many separate villages, almost all of whom described an admired person, then a less admired person. Despite the interview format and the unfamiliarity of surveys and Likert-style response options in this cultural context, patterns of response were similar to those observed in previous lexical studies.

The largest (per parallel analysis and MAP test) interpretable dimensional structures using three rotations were compared for robustness across method variations, leading to a 10-dimensional model using oblique rotation. These emic factors were labeled social self-regulation, stubbornness versus attractiveness, well-being, vitality/resilience, broadmindedness, diligence versus laziness, madness, acceptance versus discontent, hurry/worry, and peacefulness. Correlations between emic dimensions and marker scales were used to test how models developed in other linguistic and cultural contexts apply to the Supyire-Senufo context. Results supported the replication of the Big Two model, but not that of more elaborated structural models.

Overall Discussion

Studies 1 and 2 reported the results of lexical studies of personality descriptors conducted in languages representing two of the three main language families of sub-Saharan Africa. These studies in Maa and Supyire-Senufo provide insight into local, indigenous perspectives on individual differences – the distinctions meaningful and useful to people in these contexts – and

meaningfully broaden the base of information on personality language and structure. Comparing these results to what has been reported for languages from other parts of the world, predominantly from Europe now also with increasing input from languages and samples in Asia, helps us broaden our understanding of personality structure in general, and better define what aspects are universal and which are culturally specific.

In both languages, a comprehensive list of person descriptors was extracted from a dictionary and refined to a usable number with frequency of use ratings from native speakers. Responses to the list of terms were collected from native speakers in many villages. In the Maa data but not in Supyire, an unusually stark contrast emerged between ratings of admired versus less admired targets, with admired individuals being described highly uniformly. As discussed above, this is suggestive of strong socializing influences in this society. This is related to the view that in transhumance or hunting/gathering societies, a prime function assumed by personality language, at its first emergence, was socialization in the direction of moral norms (Boehm, 1999). The Maasai, partially transhumance herders, may have retained a tendency for individual-difference terms to communicate clear evaluative valence, rather than to focus often on morally neutral attributes. In contrast, the cultural context of Supyire-speakers, being sedentary and agriculturally based, has more in common with that of the places from which the Big Five and Six emerged, which also feature sedentary rather than somewhat nomadic populations.

Data analysis proceeded through a series of steps to identify the optimal emic solution that was the least sensitive to method variations. In both languages oblique rotation provided the most robust solution. The optimal emic model in Maa included five factors, and that in Supyire-Senufo 10. Ideally, follow up qualitative efforts would explore the meaning and relevance of

these dimensions to the speakers of these languages. These models could provide a basis for future work developing locally adapted measures of personality, perhaps in concert with data derived from other language groups in the regions, for example as was done for the South African Personality Inventory project (Fetvadjiev et al., 2015).

Using procedures chosen for their similarity to previous lexical work, factor scores for emic models of 2, 3, 5, and 6 factors were then compared to marker scales to test the replicability of popular etic models including the Big Two, the Pan-Cultural Three, the Big Five, and the Big Six. Marker scales were created with terms including root words of published lists of terms, allowing us to quantitatively estimate and compare the degree of convergence between emic results and popular models with claims to universal applicability. Together our two studies indicate meaningful convergence for the Big Two, but a lack of replication for the other models. This result tentatively implies that while the Pan-Cultural Three, the Big Five, and the Big Six models may arise in many places, across some cultural boundaries, they may not be universal. Some of the possible reasons for this are explored below.

The Big Two replicated about as strongly in these two African samples as has been seen among the European lexical studies that provided evidence for the replication of the Big Five. Thus, there is better evidence that this model works around the world. The divergences, however, provide input for future improvement of the Big Two model. For example, social self-regulation was more robustly replicated than dynamism; these data might suggest ways to revise the construct of dynamism to make it approximate more closely to the most universal content. Based on these two datasets, a better common denominator factor would emphasize courage, bravery and wisdom, rather than extraversion.

Is there a shared, pan-African candidate model visible in these results? Given the geographical and cultural differences between these two groups, shared components of structure would provide a hypothesized pan-African model to test in future African-language studies, alongside the Western-derived models. Comparing the factor emergence figures and principal-components analysis results, convergence between the first factors is clear, both emphasizing good character and correlating highly with Big Two social self-regulation. At two factors, the models seem to diverge: in Maa a factor of low competence and low emotional stability emerges, whereas in Supyire the second factor emphasizes boldness – a combination of low agreeableness and high extraversion (stubbornness). With three factors, however, each is joined by what was present for the other at the two-factor level, introversion versus boldness (Maa) and well-being (Supyire), making the three-factor models appear to overlap. There, however, the convergence ends. At the four-factor level, a highly culturally specific factor apparently involving age-related perceptions, emerges in Maa, whereas in Supyire, a factor contrasting vitality with laziness emerges. This may also be culturally specific, as there are many words for laziness in this language; it seems to be an important distinguishing characteristic in this subsistence horticultural context.

The lexical studies reported here included moderate sample sizes and marker scales that may not have fully comprised etic dimensions in all cases. Thus, the non-replication of the Big Five (and Big Six) model in these first ever lexical results from sub-Saharan Africa must be considered tentative, for now. To the extent that this result is confirmed in further studies, what might we conclude from such non-replication of the currently most popular scientific model of personality structure? The Big Five and Six models have a track record of utility, validity and reliability in the industrialized west. Non-replication in Africa does not (and if replicated, will

not) call any of that record into question. Such results do and could, however, suggest that these models may have culturally specific elements that should be taken into consideration when surveys are being chosen for use in other cultural contexts. For example, openness content was hard to find in either of the study languages, and the same situation has been reported for other local languages in West Africa (Rossier et al., 2017). As seen in the supplemental table of marker terms, in English and European languages, this domain includes content that might be broken into various components, for example intelligence (wisdom, education, knowledge), interests/motivation (reflective, uninquisitive, philosophical), social behavior or values (conservative, conventional), and imagination (creative, innovative). Relevant terms identified among those frequently used in Maa and Supyire only related to intelligence or cleverness. One less frequently used Maa term, translated as ‘thinking, imaginative’ was added for use as a marker, but no such terms were found in Supyire, and no terms describing creativity, introspection, or conventionality were identified in either language. People apparently don’t find such concepts among the most useful when describing each other in these contexts. The reasons for this bear future exploration. Real, systematic unconventionality might be very rare. But in the case of creativity this absence seems, on the surface, surprising given the incredibly rich musical and artistic traditions found throughout Africa. Initial discussions with local consultants suggest possible hypotheses for this situation, for example that people might not mentally categorize “the arts” in the same way as Westerners, instead viewing skill and intelligence at music or carving in a more similar way to skill and intelligence at other useful tasks, and viewing these tasks as crafts or forms of work, rather than as pursuits requiring imagination.

For another example, extraversion, which is viewed especially positively in North America, appears to be of less importance and to be viewed less positively in these two

languages. In an English language lexical study, this content can be expected to show up as one of the first dimensions (e.g. Goldberg, 1990), due to the great range of variance between people rated on a large vocabulary of subtle nuances between withdrawn and boisterous. Extraversion as a paramount dimension may be specific to cultural settings in which one often interacts with strangers. In North America, high relational mobility (Zhang & Li, 2014) means there are many opportunities to interact with strangers, making differences in talkativeness and gregariousness very apparent and important. Conley & Saucier (2017) found that the most variation in extraversion, and thus its best assessment, was captured when participants were asked about the trait in the context of being with strangers or at a party. In many other places around the world, such contexts rarely arise, creating few opportunities to observe these differences and to develop highly nuanced language for describing them. Furthermore, while extraversion is viewed quite positively in North America, the evidence from these studies (most clearly in Supyire) suggests more ambivalence, coupling boldness with stubbornness and argumentativeness.

A position of extreme cultural relativism would suggest that personality structures of any kind found in the West would be incommensurable with those obtained in radically different cultural contexts, such as the small-village-oriented sub-Saharan African language communities sampled here. Results here, while tentative, are consistent with relativism in undercutting the view that Western-derived models of five or six major personality dimensions are universal, by the criterion that they should emerge spontaneously from the lexicon of any human language-community. However, the reasonably good performance of the Big Two structure even in these populations suggests limits on any claims on extreme cultural relativism, and indicates a potential level of common-denominator structure in personality. Not only was moral content part of the well-replicated Big Two, but it was a salient component of the biggest factors in emic

models from both languages. This is a candidate for a universal component of personality conceptions around the world (as found in Saucier et al., 2014a.) There also appears to some commonality in the kind of content beyond this morality component, which tends to be captured substantially by Big Two Dynamism.

Limitations and Future Directions

Despite the challenges, it is of the utmost importance that psychologists extend their interest to a broader sample of societies and populations. Arnett (2008) showed that the majority of our evidence published in the top journals of psychology comes from samples representing only 5% of the world's population. Furthermore, research demonstrates that many aspects of psychology, including basic perceptual and cognitive functioning, differ on the basis of social and cultural contexts, and that American samples are often outliers, thus particularly unrepresentative of global norms (Heinrich et al., 2010). The current studies bring an established methodology for building models of personality structure to underrepresented contexts, meaningfully expanding the database for personality psychology. In this section, we explore the limitations of and questions raised by the current studies in detail, in order to explore potential solutions and define priorities for future work in this domain.

First, these studies are limited by their moderate sample sizes and by the use of pooled samples, including two descriptions from most participants. The data collection process was labor-intensive, requiring travel through rural areas, and recruitment of participants unaccustomed to survey tasks. The necessity of using an interview format for data collection made the process slow, limiting the number of participants that could be interviewed each day. We would like to note that this data is likely to be of higher-than-typical quality for questionnaires, due to the one-on-one interview format. And it would be hard to say that the

convergence of results at the three-factor level, between African populations with widely varying languages some 3,000 miles apart, could be attributed to chance variation arising from using moderate-sized samples. Recent large-scale survey research projects that have collected data in many countries have also tended to rely on samples of about 200 or fewer cases from African countries (McCrae et al. 2005; Gardiner et al., 2019) despite drawing exclusively on university students, the most accessible populations available. Student samples likely include particularly privileged and therefore less-representative members of the country, as well as being restricted in age.

On the other hand, even using university students, data quality and internal consistency values have been reported to be low in African countries (McCrae et al., 2005) even where sample sizes are a bit larger (e.g., Thalmayer & Saucier, 2014), likely due to participants' unfamiliarity with survey tasks. Thus, even larger samples than used in WEIRD countries are arguably needed for reliable measurement. Furthermore, factor analysis ideally proceeds with larger sample-to- variable ratios. Thus, an important goal for future studies is to achieve larger samples, while retaining the representativeness of the current project, including participants from many different villages or locations across the language-area, rather than relying on students. This could ideally be achieved by building larger teams to collect data, choosing native-speaker interviewers with relevant interests and skills, for example teachers and social workers, and maintaining data quality and consistency by providing comprehensive training and on-the-ground support. In addition to larger datasets, involving more local people in research could mean cultivating a larger base of language and culture expertise, generating more local interest in the project, and providing work and professional development opportunities for people in places where relatively fewer such opportunities are found. Access to more participants would make it

realistic to ask for single descriptions from each (rather than two), thereby avoiding dependencies in the data and allowing for a longer initial survey.

Another possible limitation of the current studies is the use of marker scales scored from within the lexical terms administered, with only a few additions made to facilitate the measurement of Big Five and Six scales. This has been a typical practice in lexical studies, and it is a norm that exists for compelling reasons. For one, lists of adjectives have been established as usable as measures of trait scales (e.g. Goldberg 1992; Saucier, 1994). Secondly, using single terms allows for a consistent task for participants, which is especially helpful in a population unaccustomed to survey research. Third, using marker terms instead of full translated inventories allows for the measurement of multiple etic models; including inventories for all would not be practical, and employing a standard-length (e.g., 40-or-more-item) inventory for only one model would not allow for a fair comparison of replicability between models. Fourth, there are no inventory measures for two of the etic models in question, which arise from commonalities observed in previous lexical work, and are therefore highly relevant to test. Fifth, translated inventories do not typically exist in the languages where lexical work is most rare and thus most needed, and translation of measures poses many of its own complications – a Big Five measure in Maasai would be highly unlikely to achieve strict measurement invariance with results from the United States. Sixth, the participant-time inventories would require would diminish the time available to respond to lexical variables; inventory length is of concern in every study but even more so in the context of oral interviews. However, that said, when and where it is possible, the inclusion of an established Big Five inventory, in reliable translation, could provide for a more conclusive test of the replication of the model and the relation between emic factors and familiar Big Five dimensions. This could also be considered for follow-up studies in Maa and Supyire.

Given the challenges of interpreting some of the emic dimensions discovered in this study, especially those least similar to common etic dimensions, we found that the input of native speakers was crucial in order to judge the interpretability of derived dimensions. Ideally in future work, feedback about the nuanced meaning and valence of terms, insights into why certain terms group together, and how dimensions relate to local cultural conditions would come from a variety of native speakers. This would allow for a kind of consensus to emerge, or for differences due to age, region, gender, or other factors to come to light. Such follow-up efforts are probably especially relevant in contexts where only a single and recent dictionary exists for translating local terms into English. There are few published resources available with which to identify errors or to expand on slight information, making the input of native speakers invaluable. A future project could include returning to these settings to explore the models developed here with multiple participants, for example inquiring about the behaviors that might be associated with the descriptive terms defining each dimension.

Another finding in this study that should be better elucidated in future work is the large first factor in the Maa results. This is typical with targets who are evaluated very heterogeneously. That is, where some are very highly regarded and other very poorly regarded, the first factor of personality terms will predictably include the most evaluative terms, and be very large. This result makes sense for the pooled data, given the extremely positive view of admired persons, and the more negative view of those who were less admired. However, the amount of variance was still unusually high (54%) for a first lexical factor even looking exclusively at less-admired targets. This seems to be a result of the strongly evaluative nature of the lexical terms, and the lack of more neutral terms in the list. It is often the case that the most frequently used personality terms have clear evaluative valence, but this pattern seems to be

more extreme in Maa than in the other languages studied so far using psycholexical methodology. The lists of terms here, around 200, were also the shortest of any yet used in lexical studies, which more often include 300-500 terms. One possibility is that Maa personality language would appear to be less extremely evaluative, and the structure would better match etic models, if we looked at a larger sample of terms. This could be initially explored by simply obtaining desirability ratings on the top 400-500 most frequently used terms in the Maa lexicon. Even better, a follow-up lexical study with twice as many variables and at least twice as many participants would strongly test the replicability of the results reported here, and meaningfully expand on them.

Another possible hypothesis for the response pattern observed among Maa participants might be a preference for dichotomous thinking. This could be explored by comparing results on a measure of this cognitive style (e.g. Oshio, 2009) between this and other groups. To the best of our knowledge, this type of thinking has only been explored thus far as an individual difference within cultures. However, it might be more common in some cultures than others, and could potentially relate to other cultural differences in cognition, perception, or worldviews, for example dialectical thinking (Peng & Nisbett, 1999), or cultural tightness versus looseness (Gelfand et al., 2011). If highly dichotomous thinking was established as a norm in this cultural setting, this might impact the ways that personality measures are used, and it could threaten the validity of Likert scales. In such a context it might be more suitable to use true/false measures.

Future work might also find ways to obtain sociodemographic information about targets. While such details are delicate to collect given the lack of privacy of the interviews, such information this could potentially reveal the unique role of certain personality characteristics within each of these cultures. For example, it would be useful to know whether the highly-

regarded individuals described are more likely to be men, older in age, and/or to have certain social roles.

Finally, it would be useful to find ways to supplement the study of single terms to assess the extent to which important etic concepts, in particular openness and extraversion, are truly absent from common discourse about individual differences, or whether they are simply talked about in other ways, perhaps using short phrases or words borrowed from other languages. In the South African Personality Inventory project (Nel et al., 2012; Fetajadiv et al., 2016) and the study of personality description in Arabic in the Levant (Zeinoun et al., 2017), both of which were based on multiple sources of content, the resulting structures resembled the Big Five and Big Six more closely than in our results. In the Levant study, for example, openness was identified in freely generated responses, but not in lexical data; this may occur because the lexicon as represented in a dictionary is naturally more conservative and slow-changing than the body of concepts frequently used in colloquial language. This question could be approached with Maa and Supyire speakers using follow-up interviews, to explore the extent that these concepts are used and discussed, how they are viewed, and with which other traits they associate.

Conclusions

This project provided a test of the universality of current models of personality, including the Big Five, by conducting the first psycholexical studies of personality structure in sub-Saharan Africa. These two studies define the local structure of personality description in languages representing two of the three main language families of Africa, in communities widely-separated in terms of geography, language, and means of subsistence. The optimal emic model in Maa included five factors, and that in Supyire-Senufo included 10. The models of the two languages appeared to have reasonable convergence at the three-factor level, with content including social

self-regulation, well-being or the lack thereof, and boldness – a mix of high extraversion with low agreeableness. Results from these studies tentatively supported the cross-cultural replicability of the Big Two model, but suggest that more elaborated models, including the Pan-Cultural Three, Big Five and Big Six, might be more specific to certain regions of the world.

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Table 1

Maasai terms with the highest loadings on optimal emic model of five factors

Maasai	English	Loading
<u>Virtue vs. Bad character*</u>		
e-ηénó	wisdom	.97
ó-mónyák	is lucky, perfect	.97
enk-ányit	respect	.96
ε-léjáraé	deception, act of cheating	-.96
o-sínya	is holy, saintly, blameless	.96
o-dópa	is effective, efficient	.96
típat	value, worth, importance	.96
o-léη	is generous, plenteous	.96
o-serîân	is safe, well, at peace	.96
o-ltηnâni oshípa	happy, joyful person	.96
<u>Debilitation versus Competence*</u>		
módóóni	blind, ignorant	.76
ηo-jíne	lame, hyena-like	.72
míñâni	blunt, deaf, dumb	.68
o-júrr [†] íshó	investigative, scrutinizes	-.59
tásat	disabled, withered, weak	.59
o-l-aishírani	complainer, complains too much	.55
o-yeηíy [†] éñá	is relaxed	-.35
o-itór [†] éíshó	is in command	-.33
<u>Boldness versus Introversion*</u>		
o-gól óshóke	is courageous	.60
o-áta en-kótók	is talkative	.59
o-gíra	is silent, quiet, soft-spoken	-.45
<u>Guileful versus Powerless*</u>		
o-l-o-sék	craftiness, intrigue	.44
ktí	little, small, young	-.44
<u>Timidity</u>		
o-uré	is afraid	.56
i-súra	shyness, timidity	.46
ε-sáyíét	poison, stingy, attractive	.46

Note. Pooled admired and less admired targets, N = 320, ipsatized data, “psychological broad” variable selection (169 terms), oblimin rotation. For each factor, all highest loading or the 10 highest loading terms are shown in order of loading magnitude. Bold is used for univocal terms, those with a primary loading at least twice as large in magnitude as any cross loading.

* Factor reflected (all signs reversed) to emphasize pole with most content.

Table 2

Correlations between Maa optimal emic solution factors with each other and with etic marker scales, as derived from the pooled sample ($N = 320$) and as derived from less admired targets only ($N = 154$; *in italics*)

	Virtue		Debilitation		Boldness		Guile		Timidity	
Debilitation vs. Competence	-.52									
Boldness vs. Introversion	-.21		.00							
Guileful versus Powerless	-.04		-.05		.08					
Timid	-.14		.15		.01		.02			
Big Two Social Self-Regulation	.99	.69	-.55	.57	-.22	-.47	-.07	.79	-.19	-.27
Big Two Dynamism	.96	.75	-.59	.37	-.09	-.18	.05	.66	-.24	-.51
PC3 Affiliation	.99	.69	-.54	.49	-.25	-.50	-.07	.74	-.19	-.17
PC3 Dynamism	.93	.76	-.53	.36	-.01	-.11	.07	.57	-.27	-.47
PC3 Order	.98	.73	-.53	.48	-.21	-.38	-.05	.67	-.18	-.26
B5 Conscientiousness	.99	.67	-.52	.66	-.21	-.35	-.04	.65	-.15	-.32
B5 Agreeableness	.99	.69	-.56	.48	-.22	-.43	-.05	.77	-.20	-.34
B5 Emotional Stability	.90	.53	-.59	.49	-.24	-.35	-.07	.45	-.07	-.46
B5 Extraversion	.81	.53	-.53	.19	.11	-.08	.09	.53	-.31	-.51
B5 Intellect	.94	.62	-.53	.40	-.23	-.38	.00	.47	-.15	-.39
B6 Conscientiousness	.98	.69	-.56	.51	-.21	-.37	-.02	.68	-.19	-.40
B6 Honesty/Humility/Propriety	.99	.68	-.54	.69	-.22	-.50	-.04	.59	-.11	-.31
B6 Agreeableness	.99	.67	-.57	.54	-.23	-.51	-.08	.74	-.17	-.33
B6 Resiliency	.96	.76	-.59	.43	-.09	-.19	.01	.61	-.21	-.55
B6 Extraversion	.49	.30	-.26	.15	.42	.08	.10	.28	-.24	-.24
B6 Openness	.91	.56	-.53	.37	-.22	-.27	.02	.42	-.14	-.36

Note. PC3 = Pan-Cultural Three; B5 = Big Five; B6= Big Six. Correlations $\geq .50$ in magnitude are bolded for emphasis.

Table 3

Correlations between Maa factors and etic marker scales, ipsatized data, varimax rotation, less admired cases only

	B2S	B2D	PC3A	PC3D	PC3O	B5C	B5A	B5ES	B5E	B5I	B6C	B6H	B6A	B6ES	B6E	B6O
F1 of 2	<u>-.71</u>	<u>-.44</u>														
F2 of 2	.63	<u>.76</u>														
F1 of 3			<u>-.66</u>	-.12	<u>-.58</u>											
F2 of 3			.54	.09	<u>.47</u>											
F3 of 3			-.29	<u>-.21</u>	-.43											
F1 of 5						.49	<u>.63</u>	.32	.45	.33						
F2 of 5						<u>-.56</u>	-.36	-.40	-.09	-.28						
F3 of 5						-.44	-.48	-.33	-.39	<u>-.46</u>						
F4 of 5						-.15	-.26	<u>-.21</u>	.03	-.25						
F5 of 5						.20	.18	.40	<u>.41</u>	.31						
F1 of 6											.55	.43	<u>.61</u>	.47	.23	.31
F2 of 6											-.36	<u>-.55</u>	-.39	-.31	-.10	-.26
F3 of 6											-.46	-.43	-.43	<u>-.54</u>	-.22	<u>-.39</u>
F4 of 6											<u>-.25</u>	-.30	-.27	-.13	-.04	-.18
F5 of 6											.25	.18	.15	<u>.47</u>	.18	.29
F6 of 6											-.14	-.25	-.26	-.04	<u>.17</u>	-.13

Note. N = 154 “Psychological broad” variable selection (169 terms). B2S = Big Two social self-regulation, B2D = Big Two dynamism, PC3A= Pan-Cultural Three affiliation, PC3D = Pan-Cultural Three dynamism, PC3O = Pan-Cultural Three order, B5C = Big Five conscientiousness, B5A = Big Five agreeableness, B5ES = Big Five emotional stability, B5E = Big Five extraversion, B5I = Big Five intellect, B6C = Big Six conscientiousness, B6H = Big Six honesty, humility, propriety, B6A = Big Six agreeableness, B6ES = Big Six emotionality vs. resiliency, B6E = Big Six extraversion, B6O = Big Six openness or originality. Correlations $\geq .50$ in magnitude are bolded for emphasis. The best match correlations (relying on a joint PCA of the scales and factor scores) are underlined. The average best match correlations by model: Big Two, .74; Pan-Cultural Three, .45; Big Five, .45; Big Six, .41.

Table 4

Supyire-Senufo terms with highest loadings on the optimal emic model of ten factors

Supyire-Senufo	English	Loading
<u>Social Self-Regulation</u>		
yukwón	quarreler	.71
silege baá ' shín	disrespectful, impolite person	.70
mayàará fóó	independent person, individualist, aloof, does not join others, does what they want independent of constraint	.67
nàfaanna shín	person who engages in trickery	.67
supyikuunɔ ki	bad person	.66
numpi	bad; ugly; dangerous	.64
ñjirivahashin	worthless person	.63
kakuumpyi	evildoer	.61
u nwɔŋ'a faha	gossip, doesn't keep confidence (mouth is light)	.59
zòŋkanpyagafóó	glutton	
<u>Stubborn vs. Attractive</u>		
nwɔwagafóó	person always insisting they are right	.63
nwɔwarafóó	person always insisting they are right	.62
ñjɛŋgaga fóó	stubborn, disobedient person	.53
u nyiìn'ā waha.	stubborn, rash (eye is hard)	.50
tufeeme	cleanliness	-.49
u lùùn'ā pen	bad-tempered (gallbladder is bad-tasting)	.49
u nwɔŋ'a waha	gets angry if contradicted (mouth is hard); insists he/she is right	.48
nwɔ	good, beautiful, handsome	-.44
sùpyigire	goodness, humaneness, love	-.44
lùù fòò	person easily angered	.43
<u>Well-Being</u>		
u à taferege ta	happiness, well-being (has got a happy part)	.67
yyepiŋe nyɛ u à.	carefree, free from anxiety, peace, well-being	.63
cyere nime nyɛ u à.	has peace, well-being	.61
kanhara	fatigue, tiredness	-.61
nàvùnŋò	disappointment	-.59
u yyāh'a nìŋè	at peace, free from care (face is cool)	.58
làhàvyā	free, having leisure time	.57
féré	happy, content	.57
yyefwugo	trouble; worry	-.56
kyaaga	suffering	-.53
<u>Vitality/Resilience*</u>		
nitiçùùwò	healthy, strong, resistant	.57

cuuŋɔ	healthy, resistant, strong	.54
u fũŋɲk'a cùgò.	discreet, secretive [closed to others] (belly is deep)	-.50
shintíciúúwó	healthy, strong person	.50
saanra	comfort, well-being, luxury [living beyond one's means]	-.37
pée	big, fat, honor, respect	.37
u jàŋ'a yiri	confused, flustered, frightened, stunned	-.34
<u>Broadmindedness</u>		
yeyeyere	lack of respect, under-estimating importance of others	-.57
nyipɛɛn	envy	-.51
yàmpɛɛnɛ	boasting	-.46
pi	bad, dangerous	-.45
nùnaara	pity; compassion (stronger than numpinge)	.43
nùmpɛŋe fòó	compassionate person	.40
naaraŋaarawa	wanderer; person who travels frequently; in the past each family chose someone as n., to travel to markets; go on errands	.40
yákili fòó	wise person	.39
katànrà fòò	joker, laughter person	.37
fyáhà	quiet, say nothing	-.31
<u>Diligence versus Laziness</u>		
tara	firm, tight, diligent; responsible	.58
supyicɔgɔcɔgòró lí	is thoughtless, scatterbrained	-.57
fábá	lazy, indolent, weak	-.52
pwugo	stupid, incompetent	-.51
córógó	giddy, thoughtless, heedless	-.47
shinfabaga ki	is lazy, indolent, weakling	-.46
màbàn	courage, diligence, industry	.46
kayama fòò	lazy person	-.44
sìncòŋò ki	is stupid, imbecile, idiot	-.43
sìncyiimè	craftiness, cleverness, intelligence, trickery	.43
<u>Madness</u>		
nùmbwùkèègèlè		
fóó	crazy; insane; mentally ill	-.72
sicyere fòó	madness; insanity	-.66
kɛɛge	spoiled, ruined, gone bad	-.40
ɲwóhó	dirty	-.39
nàŋkáàwà	thief, robber	-.39
báarápyimbaawa	shiftless person	-.39
funmbwɔhɔ fòò	jealous person	.33
u na wùrùgè	is mistaken, wrong, has acted wrongly, trick	.29
u na sígɛní	suspicious	.28
<u>Accepting versus Discontent</u>		
yìncyɛge fòò	jealous; imitation of someone to get same attention	-.56

u yyāh'ā tanha.	worried, sad (face is sour)	-.55
u fūnɲk'ā tààn	happy, contented (belly is sweet)	.53
yákilitàngàfòò	intelligent person	.51
ɲwɔmɛ́é nɪŋkin	person who doesn't contradict self (lit. owner of one	
fóó	sole promise)	.49
funtàngà fòò	generous person	.48
funvyìngèfòò	frank, open, honest person	.48
u lùùn'ā tààn	good-natured, patient (gb is sweet)	.45
ɲyitɔ̀nlo fòò	greedy, dissatisfied person	-.45
cènmèfòò	good person	.45
<u>Hurry/ Worry*</u>		
u fūnɲk'ā wyèrè	in a hurry (belly is hot)	.69
u yyāh'ā wyèrè	troubled, worried (face is hot)	.57
u ɲjìg'ā waha	stubborn, disobedient, won't listen to advice (ear is	
	hard)	.45
u jàn'ā tàrà	s/he is brave	-.43
funvwugo fòò	person in a hurry, hasty person	.36
<u>Peacefulness</u>		
u tenm'ā pen	overactive/hyperactive (sitting is difficult)	-.65
sìsùrù fòò	person who makes peace btwn. quarreling parties	.51
kajaɲa	winner, person who defeats	.48
zòncènnè	good heart, honesty, frankness	.45
kile sùpyà	good, hospitable person	.44
fíníjé	white, light-colored, clean	.43
ticènmè pyifoo	person with favor, grace, goodness	.41
kyán	bad, rebel, refuse to get along	-.40
cènmèfòò	good person	.39
silege shín	respectful, polite person who deserves respect	.36

Note. Pooled admired and less admired targets, N = 211, ipsatized data, “psychological broad” variable selection (164 terms), oblimin (0) rotation. For each factor, up to 10 terms with highest average factor loading samples are shown by order of loadings. Bold is used for univocal terms, those with a primary loading at least twice as large in magnitude as any cross loading.

* Factor reflected (all signs reversed) to emphasize pole with most content.

Table 5

Correlations between Supyire-Senufo emic factors with each other and etic marker scales

	1	2	3	4	5	6	7	8	9	10
Supyire-Senufo Emic Factors										
1 Social Self-Regulation										
2 Stubbornness vs. Attractiveness	.16									
3 Well-Being	-.14	-.03								
4 Vitality/Resilience	-.05	-.01	.12							
5 Broadmindedness	-.20	-.07	.11	.02						
6 Diligence vs. Laziness	-.21	.02	.14	.06	.12					
7 Madness	-.14	.04	.01	-.01	.04	.11				
8 Accepting vs. Discontent	-.25	-.12	.20	.08	.18	.14	.03			
9 Hurry/Worry	-.15	-.18	.15	.02	.04	.01	-.02	.10		
10 Peacefulness	-.29	-.13	.13	.09	.13	.10	.01	.18	.11	
Etic Model Factors										
Big Two Social Self-Regulation	-.68	-.45	.26	-.10	.37	.30	.05	.53	.45	.53
Big Two Dynamism	-.35	.14	.47	.13	.24	.46	.23	.58	.04	.17
PC3 Affiliation	-.61	-.47	.21	.11	.46	.24	.15	.46	.43	.54
PC3 Dynamism	-.20	.06	.34	.20	.33	.34	.12	.56	-.20	.11
PC3 Order	-.38	-.14	.12	.03	.19	.72	.02	.16	.06	.10
B5 Conscientiousness	-.47	-.11	.21	.26	.25	.80	.25	.31	.04	.29
B5 Agreeableness	-.47	-.26	.60	.15	.26	.21	.08	.57	.38	.23
B5 Emotional Stability	-.31	-.24	.43	.17	.29	.36	-.06	.58	.20	.22
B5 Extraversion	.01	.47	.22	.19	.08	.30	.06	.32	-.27	-.04
B5 Intellect	-.35	-.20	.39	.10	.33	.45	.00	.51	.15	.21
B6 Conscientiousness	-.41	-.22	.25	.32	.02	.62	.18	.32	.11	.40
B6 Honesty/Humility/Propriety	-.70	-.40	.24	.03	.44	.31	.06	.54	.24	.52
B6 Agreeableness	-.63	-.51	.43	.12	.21	.13	.10	.55	.48	.41
B6 Resiliency vs. Emotionality	-.20	.04	.64	.44	.10	.33	.00	.41	.24	.19
B6 Extraversion	.03	.10	.08	.16	.36	.30	.06	.09	-.31	-.06
B6 Openness	-.26	-.11	.38	.08	.32	.40	.02	.49	.13	.18

Note. N = 211. SSR = social self-regulation; PC3 = Pan-Cultural 3; B5 = Big Five; B6= Big Six. Correlations $\geq .50$ in magnitude are bolded for emphasis.

Table 6

Correlations between Supyire-Senufo Factors and etic marker scales in ipsatized data, less admired cases only

	B2S	B2D	PC3A	PC3D	PC3O	B5C	B5A	B5ES	B5E	B5I	B6C	B6H	B6A	B6ES	B6E	B6O
F1 of 2	-.58	<u>-.66</u>														
F2 of 2	<u>-.74</u>	-.10														
F1 of 3			<u>-.89</u>	-.25	-.39											
F2 of 3			-.19	<u>-.38</u>	-.14											
F3 of 3			-.09	-.38	<u>-.42</u>											
F1 of 5						-.53	-.58	<u>-.60</u>	.08	-.35						
F2 of 5						-.19	<u>-.60</u>	-.46	-.29	-.43						
F3 of 5						<u>-.60</u>	-.08	-.06	-.24	-.10						
F4 of 5						-.20	-.04	.16	.11	<u>.03</u>						
F5 of 5						.19	.02	.11	<u>.60</u>	.22						
F1 of 6											-.44	<u>-.89</u>	-.79	-.20	.00	-.51
F2 of 6											-.19	-.18	-.35	<u>-.71</u>	-.12	-.46
F3 of 6											-.34	-.12	-.04	-.03	-.31	<u>-.05</u>
F4 of 6											<u>-.57</u>	-.16	-.13	-.29	.03	-.16
F5 of 6											-.09	-.03	-.26	.00	<u>.38</u>	.17
F6 of 6											.00	-.05	<u>-.11</u>	.16	.30	.00

Note. $N = 107$, “psychological broad” variable selection (164 terms). F = Factor, B2S = Big Two social self-regulation, B2D = Big Two dynamism, PC3A = Pan-Cultural Three affiliation, PC3D = Pan-Cultural Three dynamism, PC3O = Pan-Cultural Three order, B5C = Big Five conscientiousness, B5A = Big Five agreeableness, B5ES = Big Five emotional stability, B5E = Big Five extraversion, B5I = Big Five intellect, B6C = Big Six conscientiousness, B6H = Big Six honesty, humility, propriety, B6A = Big Six agreeableness, B6ES = Big Six emotionality vs. resiliency, B6E = Big Six extraversion, B6O = Big Six openness or originality. Correlations $\geq .50$ are bolded for emphasis. The best match correlations (relying on a joint PCA of the scales and factor scores) are underlined. The average best match correlations by model: Big Two, .70; Pan-Cultural Three, .56; Big Five, .49; Big Six, .45.

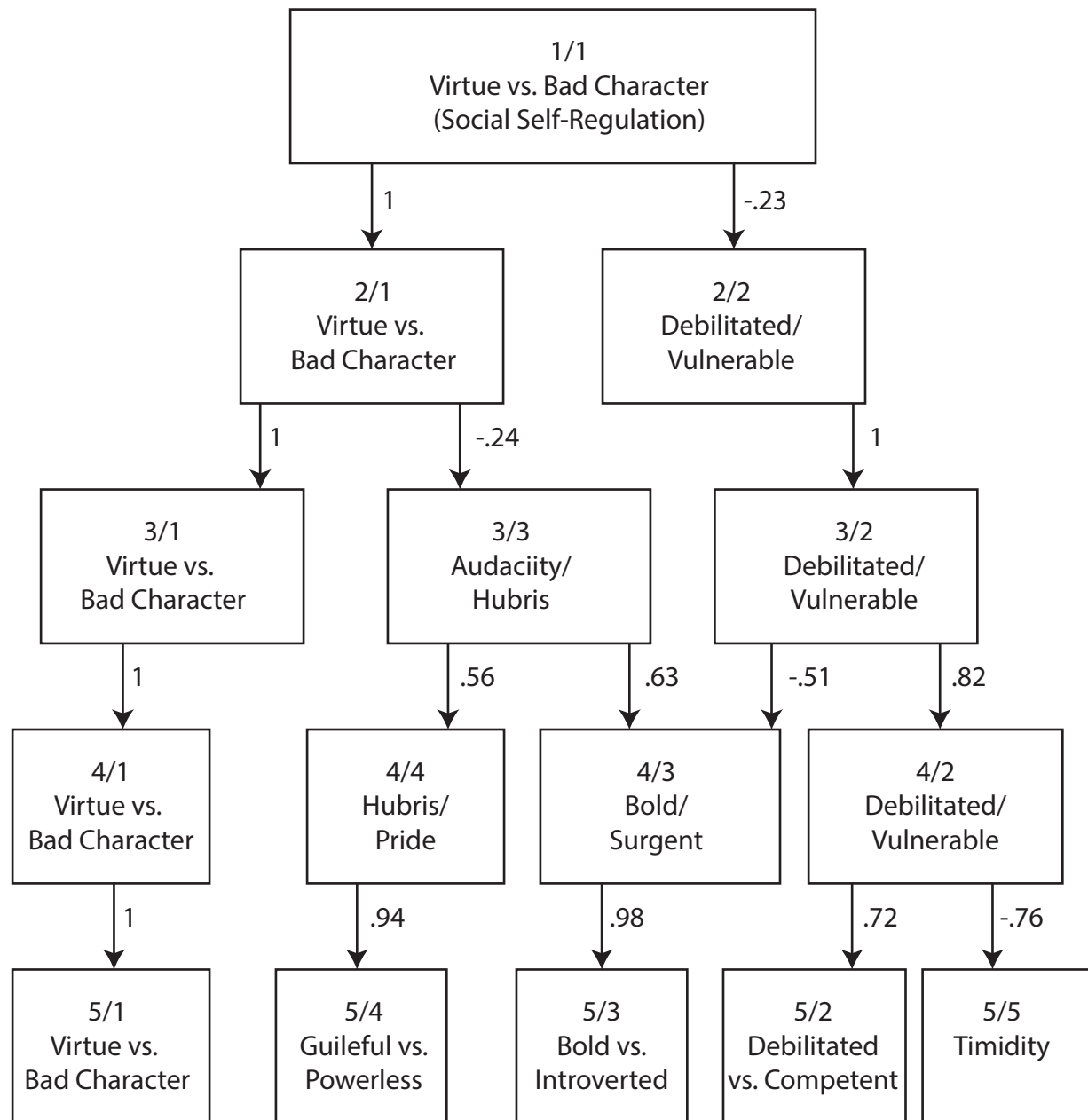


Figure 1. Pattern of factor emergence for Maasai (N = 320) ipsatized data, broad variable selection, all targets

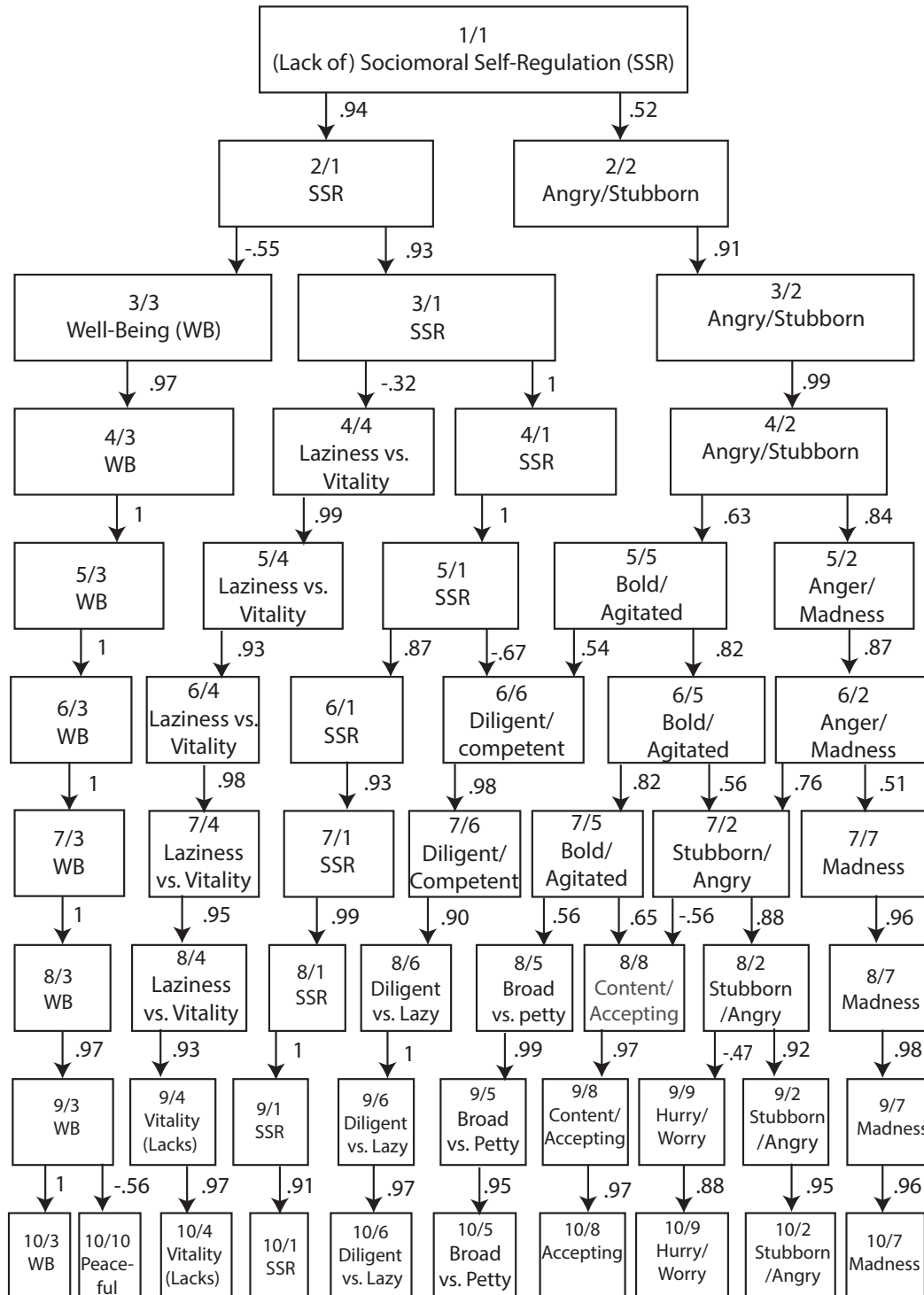


Figure 2. Pattern of factor emergence for Supyire-Senufo (N =254) ipsatized data, broad variable selection

Supplemental Materials

Table S1
Reliability (Interjudge Agreement) on Thirteen Specific and Five Broad Categories for Terms

Category	Maa	Senufo
Dispositions	.61	.61
Temperament and character traits	.73	.68
Abilities, talents, etc.	.96	.67
Temporary conditions	.61	.57
Experimental states	.90	.90
Physical-bodily states	.90	.91
Behavioral states, observable activities	.57	.70
Social and reputational aspects	.55	.58
Social roles and relationships	.83	.71
Social effects	.52	.38
Pure evaluations	.57	.62
Attitudes and worldviews	.79	.80
Overt characteristics and appearance	.80	.79
Anatomy, constitution, morphology	.93	.90
Appearance, deportment, etc.	.41	.86
Terms of limited utility	-*	.04*
Context specific or technical	-*	-*
Ambiguous, vague, outmoded	.24	-*

Note. Reliabilities (interjudge agreement) are alpha coefficients based on intercorrelations among 5 judges across the English translations of Maa and Senufo terms
The dash indicates negative average covariance between items.

* Some judges assigned no terms to these categories.

Table S2

Marker terms for Big Two, Pan-Cultural Three-Factor, Big Five and Big Six Models

Model and Scales	Maasai terms with English glosses	Supyire-Senufo terms with English glosses
Big Two (Saucier et al. 2014b) ¹		
Social Self-Regulation: Careful Diligent Disciplined Generous Gentle Good Honest Kind Obedient Respectful Responsible <i>Versus:</i> Selfish	(12) <i>o-isósion</i> : is <u>diligent</u> , fast <i>o-léy</i> : is <u>generous</u> , plenteous <i>sídái</i> : <u>good</u> (natured), well, beautiful <i>súpat</i> : <u>good</u> , nice, <u>kind</u> , polite <i>biótó</i> : healthy, <u>kind</u> , <u>good</u> <i>k-aisípani</i> : <u>truthful</u> , correct, good guesser ² <i>ó-ib⁺órr óshóke</i> : is <u>kind</u> <i>o-níy⁺ishó</i> : is <u>obedient</u> <i>enk-ányit</i> : <u>respect</u> <i>ányit</i> : shows <u>respect</u> , (capable of) shame <i>Versus:</i> <i>ó-rók óshóke</i> : is hard-hearted, <u>unkind</u> <i>kég⁺ól óyov</i> : <u>disobedient</u>	(18) <i>tara</i> : firm, tight, <u>diligent</u> ; <u>responsible</u> <i>u jùnk'ã pí</i> : <u>gentle</u> , <u>kind</u> <i>kááré</i> : <u>generous</u> <i>sùpyà</i> : <u>good</u> person <i>cènmèfòò</i> : <u>good</u> person <i>mecenye fóó</i> : <u>good</u> name; <u>good</u> reputation <i>tìcènmè pyifoo</i> : favor; grace; <u>goodness</u> <i>u mēg'a tààn</i> : has a <u>good</u> reputation (lit. name) <i>kile sùpyà</i> : <u>good</u> , hospitable person <i>sùpyigire</i> : <u>goodness</u> , humaneness, love <i>u lùùn'a tààn</i> : <u>good-natured</u> , patient <i>zòncènè</i> : <u>good</u> heart; <u>honesty</u> ; frankness <i>funvyìngèfòò</i> : frank, open, <u>honest</u> person <i>silege shín</i> : <u>respectful</u> , polite person; person that should be respected <i>Versus:</i> <i>silege baá ' shín</i> : <u>disrespectful</u> , impolite person <i>jíjígaga fóó</i> : stubborn, <u>disobedient</u> <i>u njíg'ã waha</i> : stubborn, <u>disobedient</u> ; won't listen to advice <i>yeyjere</i> : lack of <u>respect</u> for someone; underestimation of someone's importance
Dynamism: Active	(15)	(17) <i>pyii fóó</i> : <u>active</u> person

<p>Brave</p> <p>Bold</p> <p>Cheerful</p> <p>Dynamic</p> <p>Energetic</p> <p>Happy</p> <p>Lively</p> <p>Sociable</p> <p><i>Versus:</i> Bashful</p> <p>Pessimistic</p> <p>Quiet</p> <p>Shy</p> <p>Silent</p> <p>Timid</p> <p>Weak</p>	<p><i>kálámás:</i> busy, <u>active</u>, clever, cunning</p> <p><i>ó-nénéy:</i> is light in weight, <u>active</u></p> <p><i>o-pí:</i> is <u>brave</u>, fierce, fearless</p> <p><i>mágílání:</i> clever, <u>brave</u></p> <p><i>o-tonjáni oshípa:</i> <u>happy</u>, joyful person</p> <p><i>o-shípa:</i> is <u>happy</u>, pleased</p> <p><i>o-ńída:</i> is proud, haughty, <u>happy</u></p> <p><i>Versus:</i></p> <p><i>o-ijulúus:</i> sad moods, is in; not <u>happy</u> (-)</p> <p><i>molańát:</i> not <u>sociable</u></p> <p><i>o-gíra:</i> is <u>silent</u>, <u>quiet</u>, soft-spoken</p> <p><i>o-sóra:</i> <u>shyness</u>, <u>timidity</u></p> <p><i>o-l-báńíé:</i> <u>timid</u> person, coward</p> <p><i>kurét:</i> <u>timid</u>, afraid, fearful, cowardly</p> <p><i>o-dokénýa:</i> <u>timid</u>, fearful, is</p> <p><i>o-ména:</i> is poor, <u>weak</u>, feeble, wrong</p>	<p><i>u tenm'ā pen:</i> <u>overactive</u>, can't sit still</p> <p><i>u jàń'ā tārà:</i> <u>brave</u></p> <p><i>u jàń'ā nòrò:</i> <u>brave</u></p> <p><i>nùńgaga fóó:</i> <u>boldness</u>; rashness; <u>bravery</u>; foolhardiness</p> <p><i>u nùńk'ā wyèrè:</i> quick, <u>bold</u>, sharp</p> <p><i>u nùńk'ā waha:</i> <u>bold</u>, courageous, foolhardy</p> <p><i>waraga:</i> <u>cheerful</u>, <u>lively</u></p> <p><i>nìrìmè:</i> <u>energy</u> in an undertaking; hard work</p> <p><i>u fùńńk'ā nìńè:</i> <u>happy</u></p> <p><i>u yyāń'ā tààn:</i> <u>happy</u>, joyful</p> <p><i>u fùńńk'ā tààn:</i> <u>happy</u>, contented</p> <p><i>Versus:</i></p> <p><i>o-wòńhòwòfòò:</i> <u>unhappy</u> about something; always critical & fussy</p> <p><i>fyáńà:</i> <u>quiet</u>, say nothing</p> <p><i>u màńa nùńke sògò:</i> <u>shy</u>/easily embarrassed (lit. hangs the head)</p> <p><i>fáńá:</i> lazy; indolent, <u>weak</u></p> <p><i>shinńábaga kí:</i> lazy; indolent person; <u>weakling</u></p>
Pan-Cultural Three-Factor (De Raad et al., 2014)³		
<p>Affiliation:</p> <p>Affectionate, Benign</p> <p>Compassionate</p> <p>Conciliatory, Caring</p> <p>Charitable, Gentle</p> <p>Good, Good-natured</p> <p>Helpful, Hospitable</p> <p>Humane, Magnanimous</p> <p>Merciful, Mild-tempered</p> <p>Soft, Soft-hearted</p> <p>Sympathetic, Kind</p> <p>Kindhearted, Nice</p> <p>Understanding, Warm</p>	<p>(11)</p> <p><i>ó-náná óshóke:</i> is <u>compassionate</u></p> <p><i>ó-ib*órr óshóke:</i> is <u>soft-hearted</u>, <u>compassionate</u></p> <p><i>shíáát:</i> beautiful, <u>good</u>, interesting</p> <p><i>súpat:</i> <u>good</u>, <u>nice</u>, <u>kind</u>, polite</p> <p><i>sídái:</i> <u>good</u>(natured), well, beautiful</p> <p><i>bíótó:</i> healthy, <u>kind</u>, <u>good</u></p> <p><i>ó-ib*órr óshóke:</i> is <u>kind</u></p> <p><i>Versus:</i></p> <p><i>ó-yial:</i> is <u>arrogant</u>; plays ignorant</p> <p><i>ó-gógóy:</i> is stubborn, <u>arrogant</u></p> <p><i>tòrrónó:</i> <u>bad-hearted</u></p>	<p>(11)</p> <p><i>nùńaarà:</i> pity; <u>compassion</u> (stronger than numpinge)</p> <p><i>nùńpińe fóó:</i> pity; <u>compassion</u></p> <p><i>u nùńk'ā pí:</i> <u>gentle</u>, <u>kind</u></p> <p><i>nwò:</i> <u>good</u>, beautiful, handsome</p> <p><i>sùpyigire:</i> <u>goodness</u>, <u>humaneness</u>, love</p> <p><i>u lùń'ā tààn:</i> <u>good-natured</u>, patient</p> <p><i>sùpyà:</i> <u>good</u> person</p> <p><i>kile sùpyà:</i> <u>good</u>, <u>hospitable</u> person</p>

<p>Warmhearted Well-intentioned <i>Versus:</i> Abrupt Aggressive, Arrogant, Authoritarian Bigmouthed, Bossy Callous, Conceited Covetous, Despotic Domineering, Egocentric Egotistical, Hard Hard-hearted, Harsh Obstinate, Overbearing Quarrelsome, Rapacious Revengeful, Ruthless Supercilious, Selfish Self-important Tyrannical, Vindictive</p>	<p>ḡ-rók ḡshóke: is <u>hard-hearted</u>, unkind</p>	<p>cènmèfòò: <u>good</u> person <i>ticènmè pyífoo</i>: favor, grace, <u>goodness</u> <i>Versus:</i> <i>zòmpì</i>: <u>covetousness</u>; avarice; greed</p>
<p>Dynamism: Active, Adventurous Assured, Bold Brisk, Cheerful Communicative Demonstrative Dynamic, Energetic Enterprising, Enthusiastic Extroverted, Exuberant Fast, Hot-blooded Laughs a lot, Lively Loquacious, Merry Open, Outspoken Self-confident, Sociable Sparkling, Spontaneous Spirited, Talkative Temperamental Unrestrained, Vigorous Vivacious, Winning <i>Versus:</i> Bashful, Boring Closed, Coy Fainthearted, Depressed Diffident, Hesitating Inhibited, Insecure Introverted, Lonely</p>	<p>(13) <i>kálámás</i>: busy, <u>active</u>, clever, cunning <i>ḡ-nénéḡ</i>: is light in weight, <u>active</u> <i>ḡ-áta en-kótók</i>: is <u>talkative</u> <i>Versus:</i> <i>molaḡâḡ</i>: not <u>sociable</u> <i>ḡ-ismán[†]úó</i>: is <u>depressed</u>, obsessing <i>o-líyio</i>: is <u>lonely</u> <i>ḡ-gíra</i>: is <u>silent</u>, <u>quiet</u>, soft-spoken <i>o-itolil[†]ó</i>: is <u>sad</u>, <u>depressed</u>, worried <i>o-ijulúus</i>: <u>sad</u> moods, is in; not happy <i>ḡ-sóra</i>: <u>shyness</u>, <u>timidity</u> <i>ḡl-bárié</i>: <u>timid</u> person, coward <i>kurêḡ</i>: <u>timid</u>, afraid, fearful, cowardly <i>ḡ-dokénya</i>: <u>timid</u>, fearful, is</p>	<p>(10) <i>pyìi fóó</i>: <u>active</u> person <i>u nùḡk'ā waha</i>: <u>bold</u>, courageous, foolhardy <i>u nùḡk'ā wyèrè</i>: quick, <u>bold</u>, sharp <i>waraga</i>: <u>cheerful</u>, <u>lively</u> <i>wyere</i>: rapid, in a hurry; <u>fast</u>; <u>quick</u> <i>funvyìḡgèfòò</i>: frank, <u>open</u>, honest person <i>Versus:</i> <i>fyáhà</i>: <u>quiet</u>, say nothing <i>u fūḡḡk'ā per</i>: <u>sad</u> <i>u yyāh'ā tanha</i>: worried, <u>sad</u> <i>u màha nùḡke sògò</i>: <u>shy</u>/easily embarrassed (lit. hangs the head)</p>

Passive, Pessimistic Quiet, Reserved Sad, Sedentary Shy, Silent Solitary, Sombre Taciturn, Timid Timorous, Unimaginative Untalented, Withdrawn		
Order: Accurate, Aspiring Balanced, Businesslike Capable, Concrete Consistent, Decisive Determined, Diligent Disciplined, Efficient Goal- oriented Hard-working Industrious, Logical Methodical, Organized Practical, Precise Purposeful, Qualified Rational, Responsible Self-disciplined Sedulous, Stable Steadfast, Steady Systematic, Thorough Well- balanced <i>Versus:</i> Absent-minded Changeable, Chaotic Erratic, Forgetful Frivolous, Hasty Improvident, Imprudent Inattentive, Incautious Irresolute, Neglectful Scatterbrained Uncontrolled Unrealistic, Unwise Wishy- washy	(5) <i>ǝ-ídm:</i> is able, <u>capable</u> <i>ǝ-dǝpa:</i> is effective, <u>efficient</u> <i>e-nyúáátá:</i> <u>hard-work(ingness)</u> <i>k-árriyá:</i> skilled, skillful, <u>precise</u> <i>Versus:</i> <i>o-lúl*ó:</i> is <u>unstable</u>	(5) <i>màbàn:</i> courage; <u>diligence</u> ; <u>industry</u> <i>tara:</i> firm, tight, <u>diligent</u> ; <u>responsible</u> <i>kùṅkwû:</i> <u>responsibility</u> <i>zompyìwàà:</i> faithfulness; <u>steadfastness</u> <i>Versus:</i> <i>u funṅwɔ̀r'ā nyaha:</i> forgetting, <u>forgetfulness</u>
Big Five Seven-language composite (7LC): De Raad, Perugini, Hrebícková, & Szarota (1998; Table 2); Goldberg 100 adjectives: from Goldberg (1992; abbreviated by Saucier, 1994) ³		
Conscientiousness <i>Both⁴:</i> Careful Conscientious Negligent, Systematic Thorough <i>Versus:</i> Inconsistent 7LC: Diligent, Precise <i>Versus:</i> Lazy Neglectful Thoughtless	(9) <i>abàrani:</i> <u>careful</u> , perfect, ordered <i>o-isósiön:</i> is <u>diligent</u> , fast <i>k-árriyá:</i> skilled, skillful, <u>precise</u> <i>ǝ-dǝpa:</i> is effective, <u>efficient</u> <i>Versus:</i> <i>malmáli:</i> <u>negligent</u> <i>ǝ-imalímal:</i> is <u>negligent</u> ; fools about <i>táshálái:</i> <u>lazy</u> <i>ǝ-shál:</i> is weak, <u>lazy</u> , unable to work	(8) <i>màbàn:</i> courage; <u>diligence</u> ; <u>industry</u> <i>tara:</i> firm, tight, <u>diligent</u> ; <u>responsible</u> <i>Versus:</i> <i>kayama fòò:</i> <u>lazy</u> person <i>sààfòò:</i> <u>lazy</u> person <i>fábá:</i> <u>lazy</u> ; indolent, weak

Unstable <i>Goldberg</i> : Efficient Organized Practical, Prompt Neat, Steady <i>Versus</i> : Haphazard Sloppy, Undependable	<i>o-íúl* ó</i> : is <u>unstable</u>	<i>shinfábaga kí</i> : <u>lazy</u> ; indolent person; weakling <i>córógó</i> : giddy, <u>thoughtless</u> ; heedless <i>supyicógocógòró lí</i> : <u>thoughtless</u> ; scatterbrained; hair-brained person
Agreeableness <i>Both</i> : Helpful 7LC: Peaceful Tolerant <i>Versus</i> : Aggressive Bossy, Domineering Egotistical/Egocentric <i>Goldberg</i> : Agreeable Considerate, Cooperative Generous, Kind Pleasant, Sympathetic Trustful, Warm <i>Versus</i> : Cold Demanding, Harsh Rude, Selfish Uncharitable	(8) <i>o-seriân</i> : safe, well, at <u>peace</u> , is <i>o-níjo</i> : is well-known, <u>agreeable</u> <i>o-léj</i> : <u>generous</u> , plenteous, is <i>ó-ib* órr óshóke</i> : <u>kind</u> , is <i>súpat</i> : good, nice, <u>kind</u> , polite <i>bíótó</i> : healthy, <u>kind</u> , good <i>Versus</i> : <i>ó-rók óshóke</i> : hard-hearted, <u>unkind</u> , is <i>o-róbr</i> : is <u>cold</u> , not easily aroused	(7) <i>cyere nime nye u à</i> : <u>peace</u> ; well-being <i>u yyāh'a nìjè</i> : <u>peaceful</u> , free from care <i>kááré</i> : <u>generous</u> <i>funtàngà fòò</i> : <u>generous</u> ; happy <i>u pùnk'ā pí</i> : gentle, <u>kind</u> <i>Versus</i> : <i>níjé</i> : <u>cold</u> <i>wyèèrè nye u na</i> : <u>cold</u>
Emotional Stability <i>Both</i> : Imperturbable <i>Versus</i> : Anxious Emotional, Nervous 7LC: Self-Assured <i>Versus</i> : Hyper-/Over-sensitive Vulnerable <i>Goldberg</i> : Relaxed Undemanding <i>Versus</i> : Envious Fearful, Fretful High-strung Insecure, Irritable Jealous, Moody Self-pitying Temperamental Touchy, Unexcitable	(5) <i>o-yeniy* ená</i> : is <u>relaxed</u> (takes a rest) <i>Versus</i> : <i>kurèt</i> : timid, afraid, <u>fearful</u> , cowardly <i>o-lôm</i> : <u>jealousy</u> <i>o-ijulúus</i> : <u>sad moods</u> , is in; not happy <i>ó-p* ósh</i> : is <u>excitable</u>	(6) <i>yyenije nye u à</i> : carefreeness; free from <u>anxiety</u> ; peace; well-being <i>Versus</i> : <i>funmpenre fòò</i> : worry; <u>anxiety</u> <i>nyipeen</i> : <u>envy</u> <i>fyagara fóó</i> : <u>fear</u> <i>yìncyegè fòò</i> : <u>jealousy</u> ; imitation of someone to get same attention <i>funmbwòhò fòò</i> : <u>jealous</u> person
Extraversion	(10)	(8)

<p><i>Both</i>: Energetic Extraverted, Talkative <i>Versus</i>: Bashful Introverted Reserved, Shy Timid, Withdrawn 7LC: Dynamic Sociable, Vivacious <i>Versus</i>: Passive Silent, Temperamental <i>Goldberg</i>: Active Assertive, Bold Daring, Unrestrained Verbal, Vigorous <i>Versus</i>: Inhibited Quiet, Unadventurous</p>	<p>ᵛ-áta en-kótók: is <u>talkative</u> kálámás: busy, <u>active</u>, clever, cunning ᵛ-nénén: is light in weight, <u>active</u> o-itiéúsh[†]ó: <u>daring</u>, becomes <i>Versus</i>: ɪ-sóra: <u>shyness</u>, <u>timidity</u> ᵛl-bárié: <u>timid</u> person, coward ᵛ-dokénya: is <u>timid</u>, fearful molanâî: not <u>sociable</u> ᵛ-bórr: is calm, <u>quiet</u>, docile, gentle ᵛ-gíra: is silent, <u>quiet</u>, soft-spoken</p>	<p>nìrìmè: <u>energy</u> in an undertaking; hard work pyí fók: <u>active</u> person u tenm'ā pen: <u>overactive</u>, can't sit still u nùṅk'ā waha: <u>bold</u>, courageous, foolhardy nùṅgaga fók: <u>boldness</u>; rashness; <u>bravery</u>; foolhardiness u nùṅk'a wyèrè: quick, <u>bold</u>, sharp <i>Versus</i>: u maha nùṅke sògò: <u>shy</u>/easily embarrassed (lit. hangs the head) fýáhà: <u>quiet</u>, say nothing</p>
<p>Intellect <i>Both</i>: Imaginative 7LC: Clever, Intelligent Knowledgeable <i>Versus</i>: Undereducated <i>Goldberg</i>: Artistic, Bright Creative, Complex Deep, Innovative Intellectual, Introspective Philosophical <i>Versus</i>: Imperceptive, Shallow, Simple Uninquisitive Unintelligent Unsophisticated Unreflective</p>	<p>(4) ᵛ-dám[†]íshó: thinking, <u>imaginative</u> mágílání: <u>clever</u>, brave ᵛl-áshómpái: <u>educated</u> person ᵛl-áitéṅénani: teacher, imparts <u>knowledge</u></p>	<p>(5) cyígè: <u>clever</u>, smart; aware sṛncyìimè: craftiness; <u>cleverness</u>; <u>intelligence</u>; trickery kayèrè fòò wì: skilled at many things; <u>clever</u>; handyman yákilitàngàfòò: <u>intelligent</u> <i>Versus</i>: tíf: correct, right, straight; simple; not <u>complex</u></p>
<p>Big Six Cross-language Six (CL6): derived from Ashton et al. 2004; Wide-variable-selection Cross- Language Six (WCL6): from Saucier (2009)</p>		
<p>Conscientiousness <i>Both</i>⁵: Disciplined Meticulous, Orderly Organized CL6: Industrious, Diligent, Thorough, Conscientious Dutiful, Precise <i>Versus</i>: Absentminded</p>	<p>(7) abàrani: <u>careful</u>, perfect, <u>ordered</u> o-isósion: <u>diligent</u>, fast, is k-árriyá: skilled, skillful, <u>precise</u> e-nyúáátá: <u>hard-work</u>(ingness) <i>Versus</i>: kérérè: slovenly, <u>disorderly</u> táshálái: <u>lazy</u></p>	<p>(6) tara: firm, tight, <u>diligent</u>; <u>responsible</u> <i>Versus</i>: kayama fòò: <u>lazy</u> person sààfòò: <u>lazy</u> person fábá: <u>lazy</u>; indolent, weak</p>

<p>Careless, Frivolous Irresponsible, Lazy Rash, Reckless <i>WCL6</i>: Consistent Hard-working, Moderate Neat, Responsible Systematic, Tidy</p>	<p>ɔ-shál: weak, <u>lazy</u>, unable to work, is</p>	<p><i>shinfábaga kí</i>: <u>lazy</u>; indolent person; weakling <i>u nyiín'ā waha</i>: stubborn, <u>rash</u></p>
<p>Honesty and Humility or Propriety <i>CL6</i>: Just, Honest Sincere, Loyal <i>Versus</i>: Boastful Calculating Conceited Greedy Hypocritical, Sly <i>WCL6</i>: Awful Bad, Beastly Corrupt, Cruel Dangerous Disgusting, Evil Inhuman, Insane Vicious, Wicked</p>	<p>(8) <i>k-aisípani</i>: <u>truthful</u>, correct, good guesser² <i>Versus</i>: <i>o-lúbo</i>: is <u>greedy</u> <i>o-piák</i>: is mean, stingy, <u>greedy</u> <i>ɔ-isép[†]é</i>: is <u>greedy</u>, gluttonous <i>ɔ-súnkúróí</i>: guileful person, <u>hypocrite</u> <i>súújí</i>: ugly, poor, menial, <u>bad</u> <i>tórrónó</i>: <u>bad-hearted</u> <i>kiárruoni</i>: <u>wicked</u>, belligerent</p>	<p>(9) <i>funvyìngèfòdò</i>: frank, open, <u>honest</u> person <i>Versus</i>: <i>yàmpèèè</i>: <u>boasting</u> <i>zòmpì</i>: covetousness; avarice; <u>greed</u> <i>nyitònlò fòdò</i>: <u>greed</u>; felt they haven't gotten fair share <i>kyán</i>: <u>bad</u>, refuse to get along with; rebel against <i>pí</i>: <u>bad</u>, <u>dangerous</u> <i>supyikuunjo kí</i>: <u>bad</u> person <i>supyiipege kí</i>: <u>bad</u> person; <u>dangerous</u> person <i>numpí</i>: <u>bad</u>; ugly; <u>dangerous</u></p>
<p>Agreeableness <i>Both</i>: Peaceful, Tolerant <i>Versus</i>: Irritable Stubborn <i>CL6</i>: Patient, Agreeable Good-natured, Mild <i>Versus</i>: Aggressive Authoritarian, Choleric Hot-headed <i>WCL6</i>: Kind, Calm Easygoing, Generous Gentle, Understanding <i>Versus</i>: Anxious Brawling, Fiery Impatient, Impulsive Irascible, Quarrelsome</p>	<p>(11) <i>o-seriân</i>: is safe, well, at <u>peace</u> <i>ɔ-iturrín[†]á</i>: is <u>calm</u>, <u>patient</u> <i>o-níjò</i>: is well-known, <u>agreeable</u> <i>sídái</i>: <u>good(natured)</u>, well, beautiful <i>ó-ib[†]órr óshókè</i>: is <u>kind</u> <i>súpat</i>: <u>good</u>, nice, <u>kind</u>, polite <i>bíótó</i>: healthy, <u>kind</u>, good <i>o-lérj</i>: is <u>generous</u>, plenteous <i>Versus</i>: <i>ó-gógóy</i>: is <u>stubborn</u>, arrogant <i>e-wúápa</i>: <u>hot-temperadness</u>, anger <i>ó-rók óshókè</i>: is hard-hearted, <u>unkind</u></p>	<p>(11) <i>cyere nime nye u à</i>: <u>peace</u>; well-being <i>u yyāh'a nìjè</i>: <u>peaceful</u>, free from care <i>u lùùn'à tààn</i>: <u>good-natured</u>, patient <i>u jàṇ'a tēèn</i>: <u>calm</u>, unflappable <i>kááré</i>: <u>generous</u> <i>funtàngà fòdò</i>: <u>generous</u>; happy <i>u nùnk'ā pí</i>: <u>gentle</u>, <u>kind</u> <i>Versus</i>: <i>jíjígaga fóó</i>: <u>stubborn</u>, disobedient <i>u njìg'ā waha</i>: <u>stubborn</u>, disobedient; won't listen to advice</p>

Quick-tempered		<i>yukwón</i> : <u>quarreler</u> <i>u lùùn'ā pen</i> : <u>bad-tempered</u>
Resiliency vs. Emotionality <i>CL6</i> : Brave Courageous Imperturbable Independent Resolute Self-assured Strong <i>Versus</i> : Anxious Emotional Fragile Sentimental Vulnerable <i>WCL6</i> : Cowardly Depressed Fearful Frustrated Gloomy Sad	(11) <i>ɔ-prí</i> : is <u>brave</u> , fierce, <u>fearless</u> <i>mágílání</i> : clever, <u>brave</u> <i>o-gól óshókè</i> : is <u>courageous</u> <i>o-itagól*úó</i> : is <u>courageous</u> <i>o-gól</i> : is <u>strong</u> , hard, <u>courageous</u> <i>Versus</i> : <i>o-súújí</i> : <u>coward</u> <i>ɔl-bárié</i> : timid person, <u>coward</u> <i>kurèt</i> : timid, afraid, <u>fearful</u> , <u>cowardly</u> <i>ɔ-dokénýa</i> : is timid, <u>fearful</u> <i>o-itólíl*ó</i> : is <u>sad</u> , <u>depressed</u> , worried <i>o-ijulúús</i> : <u>sad</u> moods, is in; not happy	(11) <i>u jàŋ'ā tàrà</i> : <u>brave</u> <i>u jàŋ'ā nòrò</i> : <u>brave</u> <i>u nùŋk'ā waha</i> : bold, <u>courageous</u> , foolhardy <i>mayàará fǒó</i> : person who does whatever they want, <u>independent</u> of constraint <i>cuunɔ</i> : healthy, live long, resistant; <u>strong</u> ; get well <i>shiile</i> : <u>strong</u> , tough <i>niticùùwò</i> : healthy; <u>strong</u> ; resistant; long-lasting person <i>shintíciúúwó</i> : healthy person; <u>strong</u> person <i>yyeɲiŋe nyɛ u à</i> : carefreeness; free from <u>anxiety</u> ; peace; well-being <i>Versus</i> : <i>funmpenre fòò</i> : worry; <u>anxiety</u> <i>fyagara fǒó</i> : <u>fear</u> <i>u fūnŋk'ā pen</i> : <u>sad</u> <i>u yyāh'ā tanha</i> : worried, <u>sad</u>
Extraversion <i>Both</i> : Cheerful Sociable, Talkative <i>Versus</i> : Silent Withdrawn <i>CL6</i> : Extraverted Lively, Vivacious <i>Versus</i> : Introverted Passive, Quiet Shy, Solitary Reserved, Taciturn <i>WCL6</i> : Friendly Gregarious, Outgoing Smiling, Vivacious	(5) <i>ɔ-áta ɛn-kótók</i> : is <u>talkative</u> <i>Versus</i> : <i>molaŋâ</i> : not <u>sociable</u> <i>ɔ-gíra</i> : is <u>silent</u> , <u>quiet</u> , soft-spoken <i>ɪ-sóra</i> : <u>shyness</u> , timidity <i>dí*á</i> : <u>unfriendly</u>	(3) <i>waraga</i> : <u>cheerful</u> , <u>lively</u> <i>Versus</i> : <i>fyáhà</i> : <u>quiet</u> , say nothing <i>u màha nùŋke sògò</i> : <u>shy</u> /easily embarrassed (lit. hangs the head)
Originality/Talent	(3)	(4)

<i>Both</i> : Intelligent Intellectual, Original <i>CL6</i> : Clever, Sharp Creative, Gifted, Ironic, <i>Versus</i> : Conservative Conventional <i>WCL6</i> : Admirable, Brilliant, Important, Impressive Knowledgeable Outstanding, Unusual Talented, Wise <i>Versus</i> : Average Ordinary, Traditional	<i>mágiláni</i> : <u>clever</u> , brave <i>típat</i> : value, worth, <u>importance</u> <i>ol-áténénani</i> : teacher, imparts <u>knowledge</u>	<i>sìncyìimè</i> : craftiness; <u>cleverness</u> ; <u>intelligence</u> ; trickery <i>yákilitàngàfòò</i> : <u>intelligent</u> <i>cyíígè</i> : <u>clever</u> , smart; aware <i>kayèrè fòò wì</i> : skilled at many things; <u>clever</u> ; handyman
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Note. In eight cases the English glosses of a term led to word root matches with more than one scale in a model, e.g. Senufo *funtàngà fòò*: ‘generous; happy’ matched to both Big Two Social Self-Regulation and Dynamism. In four of these cases, the term was excluded from both scales. In four the first and/or majority content was relied on to place the terms, respectively, into B5 ES and B6R (Senufo *yyeñiñe pye u à*), B5 ES (Maa *kurêt*), and B6O (Maa *mágiláni*; in this case, the small number of available items for the scale was also a consideration).

¹As Maasai and Senufo data were used to construct the original lists in Table 2 of Saucier et al. (2014b), new lists were reconstructed without input from these languages. Using the same criteria as in the paper of a term that appeared in a majority of the languages, this led to no items being removed from lists, but several added (for social self-regulation careful and disciplined, for Dynamism quiet, happy, bashful, cheerful, dynamic, energetic, pessimistic, silent, and sociable) as the bar was now 4 of 7 rather than 5 of 9.

² This term with the gloss ‘truthful’ was included on SSR and Big Six Honesty despite a direct word root match because of a lack of any term with a gloss including the root ‘honest’, and the full overlap of meaning between these terms.

³ The pan-cultural 3 lists included many direct opposites using the same word root, e.g. sociable and unsociable. In these cases only the first term is shown.

⁴ “Both” refers to words that appear in both the 7LC and Goldberg lists.

⁵ “Both” refers to words that appear in both the CL6 and WCL6 lists.

Table S3

Full optimal emic solution Maasai, ipsatized data, oblimin rotation, all targets (N = 320), “psychological broad” variable selection

		Component				
		1	2	3	4	5
e-ñénó	wisdom	-.97	.56	.22	.05	-.20
ó-mónyák	lucky, perfect, is	-.97	.55	.21	.08	-.17
enk-ányit	respect	-.96	.54	.23	.10	-.19
ε-léjáraé	deception, act of cheating	.96	-.43	-.22	-.09	.07
o-sínya	holy, saintly, blameless, is	-.96	.54	.19	.11	-.19

o-dópa	effective, efficient, is	-.96	.51	.23	.08	-.16
típat	value, worth, importance	-.96	.53	.21	.07	-.21
o-lén	generous, plenteous, is	-.96	.53	.22	.02	-.22
o-serîân	safe, well, at peace, is	-.96	.55	.20	.09	-.20
o-tonáni oshípa	happy, joyful person	-.96	.56	.19	.06	-.22
o-áitéñénani	teacher, imparts knowledge	-.96	.53	.23	.07	-.16
súpat	good, nice, kind, polite	-.96	.51	.22	.09	-.19
en-cípâi	joy, happiness	-.95	.54	.21	.09	-.24
o-s ⁺ íp	certain, is	-.95	.57	.21	.09	-.20
en-ashê	gratitude	-.95	.53	.20	.07	-.17
o-aásani	doer, worker	-.95	.55	.21	.07	-.21
o-kepârri	aloof, is	.95	-.44	-.21	-.12	.07
o-éka	bored, weighed-down, is	.95	-.47	-.19	.03	.13
e-nyúáátá	hard-work(ingness)	-.95	.55	.20	.02	-.22
o-tonáni o-dópa	reliable, dependable person	-.95	.50	.19	.01	-.21
k-aisípani	truthful, correct, good guesser	-.95	.52	.26	.09	-.17
o-airúkoni	believer	-.95	.51	.26	.07	-.16
k-árriyiá	skilled, skillful, precise	-.95	.51	.20	.07	-.19
o-shípa	happy, pleased, is	-.95	.55	.16	.07	-.25
o-bórr	calm, quite, docile, gentle, is	-.95	.52	.19	.11	-.18
o-súújí	coward	.94	-.49	-.17	-.07	.09
ányit	shows shame, respect	-.94	.55	.20	.14	-.15
o-marenké	gossip	.94	-.47	-.25	-.14	.02
súújí	ugly, poor, menial, bad	.94	-.47	-.22	-.01	.07
o-piák	mean, stingy, greedy, is	.94	-.49	-.20	-.07	.10
o-ib ⁺ órr óshóke	soft-hearted, compassionate, is	-.94	.51	.19	.06	-.18
en-kídímátá	ability, capacity, strength	-.94	.57	.17	.02	-.22
o-áimónkoni	liar, cheater	.93	-.46	-.20	-.06	.08
o-ijulúus	sad moods, is in; not happy	.93	-.49	-.16	.00	.15
o-mún ⁺ ó	not straightforward, is	.93	-.48	-.20	-.11	.05
o-isósion	diligent, fast, is	-.93	.51	.18	.04	-.21
o-kelelári	loner, is a	.93	-.46	-.22	-.15	.09
a-sípani	truthful, is	-.93	.55	.23	.11	-.17
o-mór ⁺ ishó	crude, vulgar, is	.93	-.54	-.24	-.12	.04
em-piris	grace, mercy, no appetite	-.93	.51	.23	.15	-.21
abárani	careful, perfect, ordered	-.92	.55	.20	.07	-.21
séro	unreliable	.92	-.50	-.21	-.03	.02
sídái	good(natured), well, beautiful	-.92	.53	.23	.07	-.21
enk-álánó	ineptitude, clumsiness	.92	-.48	-.18	-.04	.10
o-gól	strong, hard, courageous, is	-.92	.51	.18	.03	-.21

o-góro	angry, annoyed, upset, is	.92	-.43	-.23	-.14	.10
e-wúapa	hot-temperedness, anger	.92	-.50	-.18	-.14	.10
ó-ímin	lost, is	.92	-.42	-.20	-.05	.04
ol-perét	war-monger	.91	-.48	-.22	-.14	-.01
ε-málmálisho	provocativeness of fights	.91	-.41	-.19	-.14	.03
kég [†] ól óηυ	disobedient	.91	-.42	-.23	-.08	.05
ó-íb [†] órr óshóke	kind, is	-.91	.45	.22	.09	-.18
o-idañídan	awkward in speech, confused, is	.91	-.48	-.13	-.03	.11
o-súnkúrói	guileful person, hypocrite	.91	-.44	-.20	-.05	-.01
kérérê	slovenly, disorderly	.91	-.49	-.22	-.01	.06
o-imalímal	negligent, is; fools about	.91	-.37	-.22	-.08	.04
o-áta omóm	lucky, fortunate, is	-.91	.54	.20	.03	-.21
ol-aríshani	judge, arbitrator, reconciler	-.91	.51	.22	.02	-.19
o-ípádan	skilled, is	-.91	.55	.17	.09	-.13
ol-kílói	stupid person	.91	-.48	-.17	.02	.07
ó-ísol	the best, is (excels)	-.91	.47	.18	.04	-.15
o-naúru	tired, is	.91	-.44	-.24	-.03	.19
en-kibá	hatred	.91	-.48	-.19	-.17	.06
shíáát	beautiful, good, interesting	-.91	.53	.15	.03	-.23
ol-owuarú	beast-like character	.90	-.56	-.12	-.07	.17
ó-rók óshóke	hard-hearted, unkind, is	.90	-.45	-.15	-.08	.05
kirótét	popular, favorite	-.90	.54	.17	.03	-.17
ó-p [†] ók	strengthened after stress, is	-.90	.57	.19	.02	-.20
ol-mená	contempt, scorn	.90	-.47	-.22	-.16	.11
tórrónô	bad-hearted	.90	-.52	-.25	-.04	.11
o-isép [†] é	greedy, gluttonous, is	.90	-.52	-.17	-.02	.13
dí [†] á	unfriendly	.90	-.49	-.16	-.07	.01
ó-ídım	able, capable, is	-.89	.53	.21	.00	-.16
o-níηo	well-known, agreeable, is	-.89	.59	.26	.03	-.20
malmáli	negligent	.89	-.41	-.19	-.02	.01
ol-oñóni	powerful person, bull	-.89	.49	.24	.03	-.23
o-isín [†] á	depressed, troubled, is	.89	-.49	-.09	.09	.20
kíáruoni	wicked, belligerent	.89	-.49	-.16	-.12	.07
ol-áíñókoni	sinner	.89	-.64	-.16	-.10	.15
ol-kánísái	church-goer	-.89	.50	.24	.00	-.16
o-isínán [†] úó	depressed, obsessing, is	.89	-.46	-.10	.10	.17
bíótó	healthy, kind, good	-.89	.63	.19	.01	-.28
o-nín [†] íshó	obedient, is	-.89	.49	.23	.05	-.17
o-nyonyónyony	complaining, grumbling, is	.88	-.43	-.17	-.07	-.01
o-móda	foolish, dull-witted, is	.88	-.58	-.11	-.01	.16

ó-yial	arrogant, is; plays ignorant	.88	-.38	-.23	.02	.16
ol-bárió	timid person, coward	.88	-.57	-.15	.06	.11
o-itagól [†] úó	courageous, is	-.88	.54	.13	-.09	-.24
ol-aríkoni	leader, influencer of opinion	-.88	.47	.14	.03	-.19
o-lôm	jealousy	.88	-.52	-.20	-.10	.05
o-yék [†] ishó	troublesome, is	.88	-.44	-.24	-.06	.10
o-laikín [†] ó	unable, is (fails)	.87	-.46	-.16	.12	.09
o-serém	worshiping, adoring, is	-.87	.45	.31	.06	-.18
o-gól lukonyá	stubborn, hard-headed, is	.87	-.39	-.24	-.19	.09
o-idindána	restless, is	.87	-.37	-.23	-.06	.03
o-pí	brave, fierce, fearless, is	-.87	.59	.10	-.04	-.19
ó-gógón	stubborn, arrogant, is	.86	-.43	-.19	-.17	.05
o-iróbi	cold, not easily aroused, is	.86	-.48	-.19	.02	.16
o-shál	weak, lazy, unable to work, is	.86	-.46	-.19	.05	.13
o-áta enk-óshòke	greedy for food, is	.86	-.47	-.21	.03	.04
táshálái	lazy	.86	-.53	-.17	.08	.18
kurêt	timid, afraid, fearful, cowardly	.84	-.57	-.11	.10	.17
ó-íb [†] órr ónyék	immoral, promiscuous, is	.84	-.45	-.18	.01	.04
o-sípa	true, correct, is	-.84	.53	.25	.13	-.14
o-lepóri	discouraged, is	.84	-.57	-.12	.10	.25
ol-púrrishói	thief	.83	-.66	-.13	-.05	.25
o-bayíé	inexperienced, less proficient, is	.83	-.43	-.11	.11	.08
e-ńókí	sin, offense	.83	-.72	-.14	-.02	.18
o-nyámal	busy, is (fusses)	.82	-.35	-.17	.04	.13
o-lúbo	greedy, is	.82	-.49	-.11	.13	.14
o-rém [†] ishó	good at spearing, is; defames	.82	-.47	-.23	-.21	.03
o-líyio	lonely, is	.82	-.34	-.22	.04	.09
ol-árani	murderer, killer	.82	-.56	-.20	-.02	.09
o-íka	aloof, haughty, is	.82	-.38	-.12	-.09	.06
o-pé	wild, troublesome, jittery, is	.81	-.52	-.22	-.12	.16
ε-setán	bewitchment	.80	-.73	-.07	.00	.27
kerî	mean, not dependable	.80	-.45	-.10	.02	.06
o-dokénnya	timid, fearful, is	.79	-.41	-.28	-.14	.11
ol-ásákútoni	sorcerer, minor witch	.79	-.72	-.09	-.05	.24
ol-áshómpái	educated person	-.79	.42	.17	.06	-.18
o-íul [†] ó	unstable, is	.79	-.35	-.14	-.06	.06
ó-náná óshòke	compassionate, is	-.78	.42	.42	.06	-.14
o-itíéúsh [†] ó	daring, becomes	-.78	.59	.19	-.06	-.21
o-tarapóshe	satisfied, is (or pregnant)	-.75	.37	.01	-.05	-.17
yiólóti	well-known	-.75	.66	.16	-.01	-.21

o-tagolík [†] íó	troubled, has problems	.75	-.50	-.09	.12	.22
bayaróti	perfect, meeting requirements	-.75	.46	.24	.05	-.04
ó-írit	frightened, startled, is	.74	-.53	.03	-.01	.29
mágíláni	clever, brave	-.73	.40	.17	-.07	-.12
o-tanaór [†] é	tired, weighed down, is	.72	-.40	-.20	.19	.09
o-inosónyε	remorseful, guilty, is	.72	-.35	-.06	-.07	.22
o-itirríŋ [†] á	calm, patient, is	-.72	.46	.20	.08	.06
ε-sírái	regret, deep love for something	.72	-.45	-.03	-.21	.12
o-ména	poor, weak, feeble, wrong, is	.71	-.49	-.07	.12	.07
lepésho	useless, free	.70	-.35	-.09	.10	.16
o-korró	ashamed, is	.70	-.39	.00	-.06	.24
kálámás	busy, active, clever, cunning	-.67	.40	.04	-.05	-.21
o-ibála	conspicuous, is	-.67	.44	.19	-.08	-.12
o-deénya	proud, overconfident, is	.67	-.32	-.37	-.24	.28
o-iputúkuny	frightened, horror-struck, is	.65	-.39	.03	.02	.31
molaŋâi	not sociable	.61	-.31	-.10	.01	-.08
ó-lálá	broad-minded, is	-.61	.45	.07	-.08	.01
kitók	elderly, senior	-.61	.31	.22	-.16	-.12
o-itolíl [†] ó	sad, depressed, worried, is	.60	-.35	.01	.14	.29
ol-wuasá	arrogance, snobbishness	.60	-.36	-.35	-.24	.08
o-ŋída	proud, haughty, happy is	.53	-.15	-.26	-.29	.11
o-én [†] íshó	tied against disease, bad luck, is	.53	-.39	-.21	.04	.44
ó-p [†] úsh	excitable, is	.52	-.28	-.45	-.14	.02
ol-alótoni	pilgrim, travels a lot	.50	-.15	-.20	.12	-.09
en-kírútótó	surprise, fright	.50	-.42	-.39	.18	.35
o-sí	impatient, is	.49	-.16	-.13	.05	-.13
bótór	old, senior, large	-.45	.33	.17	-.39	-.14
o-ŋásiarsho	astonished, surprised, is	.37	-.01	-.31	-.15	.13
módóóni	blind, ignorant	.57	-.76	.02	.16	.38
ŋojíne	lame, hyena-like	.55	-.72	-.01	.15	.40
mínáni	blunt, deaf, dumb	.64	-.68	-.07	.17	.33
o-júrr [†] íshó	fickle, is; scrutinizes	-.55	.59	.15	-.18	.08
tásat	disabled, withered, weakly	.50	-.59	-.01	-.15	.18
ol-aishirani	complainer, complains too much	.42	-.55	-.08	-.02	.02
o-yeŋíy [†] éŋá	relaxed, is (takes a rest)	-.28	.35	-.02	.09	.10
o-itór [†] éíshó	in command, is	-.28	.33	-.06	-.33	.15
o-gól óshóε	courageous, is	-.07	.26	-.60	.15	-.11
o-áta en-kótók	talkative, is	.21	-.04	-.59	-.07	-.01
o-gíra	silent, quiet, soft-spoken, is	-.44	.34	.45	.14	.15
ol-əsék	craftiness, intrigue	.39	-.30	-.30	-.44	.16

kití	little, small, young	-.24	.13	-.01	.44	-.09
o-uré	afraid of, is	.12	-.05	.02	-.16	.56
í-sóra	shyness, timidity	.43	-.30	.12	.07	.46
ε-sáyíét	poison; stingy, attractive	.01	-.06	-.41	-.06	.46

Table S4

Correlations between Maasai factors and etic marker scales in raw data, among less admired targets only (N =154)

	B2S	B2D	PC3A	PC3D	PC3O	B5C	B5A	B5ES	B5E	B5I	B6C	B6H	B6A	B6ES	B6E	B6O
F1 of 2	<u>-.87</u>	<u>-.51</u>														
F2 of 2	-.37	<u>-.70</u>														
F1 of 3			<u>-.62</u>	-.32	-.48											
F2 of 3			-.36	<u>-.73</u>	-.38											
F3 of 3			.51	.39	<u>.56</u>											
F1 of 5						<u>-.51</u>	<u>-.43</u>	-.42	-.41	-.28						
F2 of 5						<u>-.60</u>	<u>-.55</u>	-.35	-.18	-.31						
F3 of 5						-.35	-.34	-.45	<u>-.58</u>	.04						
F4 of 5						-.22	-.24	<u>-.26</u>	.01	-.10						
F5 of 5						.18	.37	.25	.23	<u>.55</u>						
F1 of 6											<u>-.51</u>	-.48	<u>-.63</u>	-.36	-.09	-.33
F2 of 6											-.47	<u>-.53</u>	-.35	<u>-.58</u>	-.40	-.25
F3 of 6											-.41	-.43	-.28	-.47	<u>-.40</u>	-.01
F4 of 6											-.17	<u>-.43</u>	-.32	-.05	.00	-.04
F5 of 6											.28	.16	.37	.41	.02	<u>.43</u>
F6 of 6											<u>-.07</u>	-.06	.08	.05	-.13	.14

Note. Varimax rotation, “psychological broad” variable selection (169 terms). F = Factor, B2S = Big Two social self-regulation, B2D = Big Two dynamism, PC3A= Pan-Cultural Three affiliation, PC3D = Pan-Cultural Three dynamism, PC3O = Pan-Cultural Three order, B5C = Big Five conscientiousness, B5A = Big Five agreeableness, B5ES = Big Five emotional stability, B5E = Big Five extraversion, B5I = Big Five intellect, B6C = Big Six conscientiousness, B6H = Big Six honesty, humility, propriety, B6A = Big Six agreeableness, B6ES = Big Six emotionality vs. resiliency, B6E = Big Six extraversion, B6O = Big Six openness or originality. Correlations $\geq .50$ in magnitude are bolded for emphasis. The best match correlations (relying on a joint PCA of the scales and factor scores) are underlined. The average best match correlations by model: Big Two, .79; Pan-Cultural Three, .64; Big Five, .51; Big Six, .42.

Table S5

Supyire-Senufo optimal emic solution of 10 factors, oblimin rotation, all targets (N = 211), “psychological broad” variable selection

		1	2	3	4	5	6	7	8	9	10
yukwón	quarreler	.71	.22	-.11	.08	-.15	-.20	-.31	-.26	-.18	-.39
silege baá ' shín	disrespectful, impolite person	.70	.04	-.12	-.08	-.11	-.31	-.15	-.16	-.08	-.31
mayàará fóó	independent person, individualist, aloof, does not join others, person who does whatever they want, independent of constraint	.67	.11	-.05	.05	-.23	-.29	-.20	-.14	-.02	-.06
nàfaanna shín	person who engages in trickery	.67	.17	-.23	.05	-.19	-.19	-.05	-.35	-.23	-.19
supyikuunɔ ki	is bad, dangerous	.66	.27	-.20	-.03	-.13	-.24	-.13	-.29	-.22	-.26
numpi	bad, ugly, dangerous	.64	.21	-.19	.14	-.19	-.18	-.05	-.42	-.07	-.22
ɲjirivahashin	worthless person	.63	.00	-.18	.08	-.06	-.07	-.13	-.05	-.05	-.15
kakuumpyi	evildoer	.61	.22	-.16	.12	-.21	-.26	-.25	-.34	-.05	-.37
u ɲwɔ̃g'a faha	gossip, doesn't keep confidence (mouth is light)	.59	.15	-.21	.01	-.27	-.11	-.12	-.21	-.29	-.29
zòŋkanpyagafóó	glutton	.58	.08	-.09	.14	-.25	-.24	.03	-.23	-.36	-.21
supyipege ki	is a bad person	.57	.28	.01	.01	-.13	-.20	-.42	-.21	-.03	-.27
kajwuɲjwu	tattletale, tale-bearer	.57	.03	-.19	-.20	-.26	-.20	-.03	-.13	-.15	-.26
zòmɲì	covetousness, avarice, greed	.57	.25	-.15	.03	-.41	-.14	-.05	-.32	-.27	-.38
cwɔ̃nhɔmɔfòò	critical person, always unhappy about smthg	.55	.32	-.16	.12	-.12	-.16	-.15	-.43	-.01	-.22
sílégé	shame, embarrassment	-.54	-.34	.02	-.17	.22	.29	.06	.30	.17	.25
cwɔ̃rɔ̃fòò	contrarian, person who on purpose does something unexpected	.52	.23	-.11	.08	-.29	-.21	-.14	-.41	-.18	-.47
kàkàlà	debauched, dissipated person	.51	-.07	-.10	-.12	-.23	.03	-.14	-.14	-.33	-.28

mecenɲe fóó	person with good name, good reputation	-.51	-.15	.19	.01	.31	.14	.21	.40	.22	.26
u na j	commits adultery	.49	-.08	-.23	-.09	-.05	-.22	-.28	-.15	-.32	-.39
u mēg'ā pen	bad reputation (name is bad-tasting)	.47	.17	-.24	.07	-.22	-.08	.01	-.06	-.02	-.19
u mēg'a tààn	good reputation (name is sweet)	-.46	-.17	.36	.07	.12	.08	-.11	.32	.25	.23
sahacènàṅkààwà	thief who knows place he robs	.46	.01	-.02	.28	.09	-.30	.01	-.18	.04	-.20
kááré	generous	-.46	-.36	.17	.00	.23	.22	.14	.46	.21	-.02
kakuumpyi	evildoer	.45	.20	-.09	.01	-.33	-.17	-.36	-.19	.00	-.27
supyitahantórógó kí	is vagabond	.43	.00	-.11	.21	-.06	-.31	-.22	.01	.04	-.41
pèènè	fatness, obesity, honor, respect	-.43	-.32	.05	-.04	.42	.29	.02	.19	.25	.19
sèè shín	real person	-.42	-.21	.09	-.25	.23	.19	.13	.21	.12	.33
u kyaa sànràm'a tààn	fed up easily; quickly tired of doing anything he/she undertakes)	.42	.03	-.05	.10	-.24	-.07	-.12	-.18	-.17	-.27
u jùnk'ā pi.	gentle (head is soft)	-.41	-.29	.14	.16	.16	-.02	.15	.32	.25	.36
u jàṅ'a tèèn	calm, unflappable (courage or shadow is sitting)	-.41	-.05	.31	.01	.13	.09	.23	.32	.24	.12
tíí	correct, right, straight; simple; not complex	-.40	-.33	.22	-.08	.18	.35	-.05	.30	.12	.17
zòṅkanɲyagafóó	glutton	.39	.14	-.02	.29	-.11	-.12	-.08	-.33	-.25	-.17
tanha	severe, sour	.37	.36	-.21	-.20	-.33	.08	.06	-.34	-.12	-.23
kapyimpyi	worker, doer	-.28	.04	.16	-.06	.17	.26	.18	.05	.05	.26
jwɔwagafóó	person always insisting they are right	.12	.63	-.16	.01	-.01	.11	.14	-.07	-.14	-.06
jwɔwarafóó	person always insisting they are right	.13	.62	-.12	.05	-.03	.07	.12	-.16	-.20	-.12
jíjígaga fóó	stubborn, disobedient person	.27	.53	-.05	.09	-.02	.00	.09	-.10	-.28	-.31
u nyiìn'ā waha.	stubborn, rash (eye is hard)	.12	.50	-.14	.04	.03	.01	.12	-.11	-.27	-.45
tufeeme	cleanliness	-.24	-.49	.14	.12	.15	.26	.17	.11	.15	.19
u lùùn'ā pen	bad-tempered (gallblad is bad-tasting)	.42	.49	-.14	.13	-.15	.10	.05	-.41	-.18	-.26

u jwɔ̃g'a waha	gets angry if contradicted (mouth is hard); insists he/she is right	.11	.48	-.16	.23	-.02	.14	.14	-.23	-.43	-.21
jwɔ	good, beautiful, handsome	-.22	-.44	.14	-.15	.06	.20	.10	.05	.09	.37
sùpyigire	goodness, humaneness, love	-.29	-.44	.09	-.14	.38	.31	.08	.38	.42	.17
lùù fòò	person easily angered	.14	.43	-.17	-.04	.18	.24	.17	-.20	-.27	-.11
jùṅgaga fóó	bold, rash, brave, foolhardy person	-.07	.42	.09	-.04	.06	.08	.08	.27	-.05	.03
lùpèèn	choler; anger	.15	.40	-.19	.02	-.18	.24	.07	-.36	-.15	-.37
u jùṅk'a waha	bold, courageous, foolhardy (head is hard)	.01	.37	.15	.08	-.01	.05	.02	.10	-.30	.02
u jùṅk'a kwù.	slow at work, emotionless (head is dead)	-.12	-.25	-.04	.22	-.02	-.15	.21	-.04	.23	.06
jáánjá	severe, red, warm-colored	.00	-.23	.12	.11	.11	.06	.01	.11	.01	-.09
u à taferege ta	happiness, well-being (has got a happy part)	-.21	-.09	.67	-.05	-.03	.12	.03	.14	.21	.10
yyepiṅe nye u à.	has carefreeness, freedom f. anxiety, peace, well-being	-.20	.00	.63	-.20	.10	.21	-.01	.18	.02	.21
cyere nime nye u à.	has peace, well-being	-.19	-.12	.61	-.21	.12	.19	-.17	.13	.24	.23
kanhara	fatigue, tiredness	.11	-.10	-.61	.02	-.11	.02	.04	-.03	-.02	-.13
nàvùṅḡ	disappointment	-.03	-.09	-.59	.15	-.25	-.11	-.09	-.24	-.09	.07
u yyāh'a jìṅè	at peace, free from care (face is cool)	-.20	-.20	.58	-.07	-.10	-.03	.07	.17	.10	.16
làhàvyâ	free, having leisure time	-.17	-.08	.57	-.17	.13	.11	.01	.13	.01	.20
féré	happy, content	-.13	-.09	.57	-.13	.05	.09	.14	.20	.22	-.07
yyefwugo	trouble, worry	.00	.11	-.56	.13	-.21	.00	-.25	-.05	-.21	-.13
kyaaga	suffering	-.05	-.02	-.53	.37	-.29	-.29	-.22	-.12	-.20	-.10
u a jùṅjirìnè ta	well-being, health, wealth (head raising)	-.24	-.11	.52	-.05	.08	.13	-.10	.21	.11	.13
u funṅgwàḡr'ā nyaha	forgetful (his stomach blackness is a lot)	.33	.20	-.49	-.01	-.11	-.34	.12	-.33	-.17	-.24

níné	calm, slow, cool	.06	-.05	-.49	.33	-.26	-.20	.06	-.13	-.23	.11
funmpenre fòò	worried anxious person	.27	.14	-.48	.23	-.20	-.21	-.05	-.27	-.11	.01
u a nùzògòrò ta	shame, cause for shame (head bending, bowing)	.17	.04	-.48	.03	-.12	-.23	.01	-.17	-.08	-.34
kayàn'a ù tà	in pain (pain has gotten h.)	-.09	.07	-.45	.19	.08	.07	.09	-.27	.07	-.30
pwòrò	the best	-.26	-.16	.44	-.06	.04	.28	-.02	.08	.10	.13
u cyēg'a cwònrò	is busy (hand is stuck)	.03	.08	-.44	.06	-.05	-.17	.01	.07	-.10	.02
cwónrò	embarrassed, hardpressed	-.10	-.05	-.43	.32	-.22	-.07	-.19	-.15	-.06	-.01
u fūnṅk'a pēn	sad (belly is bad-tasting)	.10	.06	-.42	.38	-.09	-.11	.17	-.36	-.12	.06
kùṅkwû	responsibility	.04	-.03	-.35	.11	-.13	.17	.10	-.27	-.18	.04
kàlàmbààrà	ignorance, lack of learning	-.02	-.10	-.34	.00	-.27	.01	.09	-.24	-.12	-.06
pyìi fòó	active person (has children)	-.02	.08	.34	-.20	-.14	.19	.07	.09	.22	.16
yyaha yyèrè shín	important successful person	-.22	.16	.34	-.23	.01	-.04	.09	.24	.14	.31
u fūnṅk'a jìnè	happy, content, satisfied (interior is cool)	-.13	-.14	.31	.01	-.15	-.20	.15	-.02	.26	.00
m̀pworo	clowning, buffoonery	-.01	-.11	-.30	.23	-.15	-.08	.12	-.09	-.20	-.05
nitìcùùwò	healthy, strong, resistant	-.22	.10	.23	-.57	.19	.05	.00	-.13	.12	.08
cuuṅo	healthy, resistant, strong	-.02	-.19	.17	-.54	-.12	.15	-.04	-.06	.10	.10
u fūnṅk'a cùgò.	discreet, secretive [closed to others] (belly is deep)	.00	.09	-.03	.50	-.07	.06	.14	-.10	-.02	-.07
shintícuúwó	healthy, strong person	-.04	.12	.27	-.50	-.03	.05	.00	-.01	.13	.13
saanra	comfort, well-being, luxury [living beyond one's means]	-.16	-.06	.22	.37	-.09	.12	.19	-.05	.22	-.08
péè	big, fat, honor, respect	.07	-.11	.14	-.37	-.06	-.07	.06	.04	.03	-.01
u jàṅ'a yìrì	confused, flustered, frightened, stunned	.29	-.04	-.10	.34	-.09	-.07	-.19	-.29	.03	.05
yyejyere	lack of respect, under-estimating importance of others	.44	.06	-.18	-.01	-.57	-.15	-.05	-.17	-.15	-.25

nyipeen	envy	.35	.20	-.08	-.11	-.51	-.17	-.22	-.35	-.14	-.25
yàmpèèè	boasting	.22	.04	-.09	-.12	-.46	-.26	.05	-.15	-.12	-.22
pi	bad, dangerous	.25	.21	-.19	-.13	-.45	-.22	-.27	-.21	.05	-.26
nùnaarà	pity; compassion (stronger than numpinge)	-.32	-.27	.06	-.18	.43	.17	.18	.25	.35	.01
jùmpinje fóó	compassionate person	-.34	-.13	.06	-.11	.40	-.01	.06	.23	.30	.40
naarapaarawa	wanderer	.08	.10	.02	.01	.40	.03	.03	-.06	-.16	-.12
yákìlì fóó	wise person	-.36	-.02	.10	-.13	.39	.20	-.09	.26	-.01	.28
katànrà fòò	joker, laughter person	-.22	-.03	-.01	-.10	.37	.01	.17	.15	-.11	.06
fyáhà	quiet, say nothing	-.18	-.24	.08	.03	-.31	-.11	.19	.02	.21	-.04
fànà fòò	authority, person with power	-.13	-.11	.19	-.16	.30	-.29	-.20	.05	.11	.19
tara	firm, tight, diligent, responsible	-.34	-.21	.16	-.18	.14	.58	.12	.27	.20	.11
supyicogocogdró lí	is thoughtless, scatterbrained	.39	.10	-.15	.05	-.34	-.57	-.07	-.07	.00	-.35
fábá	lazy, indolent, weak	.15	-.15	-.29	-.08	-.06	-.52	-.33	-.16	.01	-.24
pwugo	stupid, incompetent	.32	.02	-.18	-.02	-.37	-.51	-.06	-.17	-.15	-.23
córógó	giddy, thoughtless, heedless	.16	.08	-.10	-.04	-.38	-.47	-.30	-.24	-.09	-.33
shinfabaga ki	is lazy, indolent, weakling	.45	-.06	-.15	.40	-.08	-.46	-.29	-.11	-.02	-.21
màbàn	courage, diligence, industry	-.34	-.29	.07	-.13	.30	.46	.00	.15	.10	-.01
kayama fòò	lazy person	.24	-.05	-.10	.42	.07	-.44	-.14	-.21	.07	-.16
sìncòhò ki	is stupid, imbecile, idiot	.26	.03	-.13	.04	-.31	-.43	-.20	-.03	-.08	-.19
sìncyiimè	craftiness, cleverness, intelligence, trickery	-.19	-.09	.36	-.12	.33	.43	.03	.31	.07	.19
cyígè	clever, smart, aware	-.12	-.12	.27	-.11	.13	.43	-.06	.34	.10	.15
yyāh'a wwò ù nà	stunned (from having been hit); crazy, has acted badly	.16	-.19	-.30	.29	-.34	-.42	.07	-.04	-.08	-.18
shiile	strong, tough	-.26	-.18	.17	-.09	.01	.42	.14	.09	.30	.24

kayama fòò	lazy person	.20	-.14	-.08	.29	.14	-.41	-.12	-.30	.31	-.15
zòmpyìwàà	faithfulness; steadfastness	-.14	.23	.05	.06	.11	.41	-.06	.04	-.05	-.06
nìrìmè	energy in an undertaking; hard work	-.14	-.17	.23	-.25	-.10	.38	.02	.20	.17	.26
cyegenè	athletic	-.28	-.03	.19	-.01	.21	.37	.09	.22	.03	-.06
waraga	cheerful, lively	-.06	-.12	.18	-.06	.32	.35	.30	.19	-.33	-.09
sànsǎn	clumsy, be; move clumsily	.23	.01	-.21	.01	-.12	-.33	-.15	-.21	-.09	-.11
wyere	rapid, in a hurry, fast, quick	-.24	-.22	.09	-.03	.28	.32	.24	.30	-.19	.00
fànhàfèmbwòhò kì	is important person	-.07	-.19	.14	.04	.17	-.31	-.31	.09	-.01	.06
nàṅkòcyere	childishness, childhood, quality of being a child	.15	-.17	-.23	.05	-.03	-.30	.08	-.08	.11	-.14
fànhà	strength, power	-.20	-.04	.26	-.13	.13	.28	.21	.24	.12	-.07
funmpege fòò	stingy person	.25	.02	-.16	-.03	-.18	-.27	-.04	-.18	.10	-.21
nùmbwùkèègèlè fóó	crazy; insane; mentally ill	.20	-.10	-.04	.07	-.17	-.16	-.72	-.07	-.02	.09
sìcyere fóó	insane person	.00	-.17	.01	.02	.10	.10	-.66	.11	.27	-.06
kεεge	spoiled, ruined, gone bad	.30	.13	-.18	-.05	-.38	-.30	-.40	-.19	-.01	-.21
ṅwóhó	dirty	.10	.05	-.17	-.05	-.06	-.28	-.39	-.21	.00	-.26
nàṅkààwà	thief, robber	.28	-.06	-.11	.01	-.10	-.33	-.39	-.16	-.07	-.12
báárápyimbaawa	shiftless person	.24	-.06	-.04	.18	-.02	-.01	-.39	-.15	.18	-.20
funmbwòhò fòò	jealous person	-.07	.30	.17	.04	-.02	.00	.33	-.02	-.14	.11
u na wùrùgè	is mistaken, wrong, has acted wrongly, trick	.24	.14	-.28	-.02	-.21	-.04	.29	-.26	-.13	-.25
u na sígéní	is suspicious	-.01	.05	-.13	.15	.02	-.03	.28	-.03	.05	-.07
yìncyεge fòò	jealous person	.17	.21	-.05	.12	-.19	-.19	-.09	-.56	-.18	-.32
u yyāh'ā tanha.	worried, sad (face is sour)	.05	.23	-.07	.06	-.16	.13	-.06	-.55	-.03	-.05
u fūṅṅk'ā tààn	happy, contented (belly is sweet)	-.39	-.16	.27	-.02	.14	.14	.07	.53	.30	.27
yákìlitàngàfòò	intelligent person	-.31	.01	.28	-.12	.33	.25	-.03	.51	.17	.23

ɲwɔméé ɲɪŋkɪn fɔ́ó	person who doesnt contradict self (lit. owner of one sole promise)	-.42	-.19	.09	-.14	.26	.02	.02	.49	.30	.31
funtàngà fòò	generous person	-.31	-.08	.23	-.18	.22	.12	.14	.48	.39	.19
funvyìngèfòò	frank, open, honest person	-.41	-.21	.13	-.05	.19	.20	.02	.48	.27	.43
u lùùn'a tààn	good-natured, patient (gb is sweet)	-.35	-.33	.16	.07	.16	.11	.04	.45	.41	.27
ɲyitɔɔnlo fòò	greedy, dissatisfied person	.28	.35	-.10	.18	.00	-.07	.29	-.45	-.05	-.34
cènmèfòò	good person	-.43	-.20	.20	.04	.31	.22	.04	.45	.22	.33
u ɲùŋk'a wyèrè.	quick, bold, sharp (head is hot)	-.11	.24	.15	.04	.15	.13	.13	.42	-.31	-.03
fyagara fɔ́ó	fearful person	.02	-.23	-.17	-.08	.17	-.32	.14	-.41	.05	-.03
kafiniviniwe	liar	.41	.19	-.14	.18	-.16	-.19	-.26	-.41	.02	-.37
ɲyicwuufóó	clear-sighted person	.23	.37	-.03	.10	-.22	-.02	.06	-.41	-.06	-.37
u jàŋ'a tàrà	s/he is brave	-.24	.06	.34	.09	.09	.19	.06	.37	.28	.15
ɲínjé	calm, slow, cool	.02	-.11	.00	-.05	-.04	-.10	.01	-.36	.10	.01
u yyāh'a tààn.	happy, joyful (face is sweet)	-.26	-.26	.18	.12	.32	.13	-.01	.36	.21	.30
kacyinzun	fetish worshipper-priest	.13	.06	-.10	.22	-.01	-.06	-.01	-.35	-.07	-.10
yílégè	small, curious	.12	.30	-.18	.17	-.23	-.11	-.01	-.31	-.14	-.27
u fūŋk'a wyèrè	in a hurry (belly is hot)	.03	.08	-.11	-.02	.12	-.02	.08	.00	-.69	-.09
u yyāh'a wyèrè	troubled, worried (face is hot)	.11	.23	-.17	.21	.04	-.03	.05	.00	-.57	-.15
u ɲjīg'ā waha	stubborn, disobedient, wont listen to advice (ear is hard)	.23	.40	-.16	.28	-.08	-.02	.13	-.23	-.45	-.26
u jàŋ'a tàrà	s/he is brave	-.14	.03	.24	.04	.19	.34	.12	.23	.43	.05
funvwugo fòò	person in a hurry, hasty person	.00	.15	-.20	-.12	.17	-.11	.14	-.09	-.36	.03
u tenm'ā pen	overactive/hyperactive (sitting is difficult)	.28	.26	-.22	-.05	-.13	-.06	.09	-.03	-.34	-.65
sìsùrù fòò	person who makes peace btn. quarreling parties	-.29	-.03	.00	-.14	.16	.02	.23	.30	.22	.51

kajaṇa	winner, person who defeats	-.19	.03	.16	-.18	.12	.32	.19	.24	-.06	.48
zòncènnè	good heart, honesty, frankness	-.39	-.32	.02	-.17	.23	.28	-.02	.40	.32	.45
kile sùpyà	good, hospitable person	-.39	-.31	.06	-.16	.23	.06	-.06	.02	.12	.44
fíníṅé	white, lightcolored, clean	-.28	-.29	.01	-.10	.19	.23	.01	.22	.04	.43
tìcènmè pyifoo	person with favor, grace, goodness	-.39	-.12	.25	-.19	.24	.18	.24	.34	.26	.41
kyán	bad, rebel, refuse to get along	.31	.34	-.27	.04	-.39	-.15	.09	-.34	-.30	-.40
cènmèfòò	good person	-.31	-.25	.11	-.07	.25	.22	.12	.17	.10	.39
silege shín	respectful, polite person who deserves respect	-.18	-.04	.11	-.06	.07	.04	-.26	.14	.17	.36
lùyìrìlì	anger, choler	.12	.28	-.23	-.13	-.28	.09	.17	-.26	-.18	-.34
túmúfóó	Christian	-.06	-.01	.14	-.23	.14	-.08	-.27	.02	-.13	.34
báragá shín	person with power	-.26	.08	.15	-.12	.21	.10	.11	.30	.19	.31

Table S6

Correlations between Supyire-Senufo Factors and etic marker scales in raw data, less-admired targets only (N=107)

	B2S	B2D	PC3A	PC3D	PC3O	B5C	B5A	B5ES	B5E	B5I	B6C	B6H	B6A	B6ES	B6E	B6O
F1 of 2	<u>-.56</u>	-.04														
F2 of 2	.74	<u>.79</u>														
F1 of 3			-.47	-.08	<u>-.12</u>											
F2 of 3			<u>.81</u>	.52	.60											
F3 of 3			.05	<u>-.36</u>	-.11											
F1 of 5						<u>-.82</u>	-.17	-.52	.04	-.05						
F2 of 5						.37	<u>.76</u>	.16	.38	.60						
F3 of 5						-.11	-.10	-.48	<u>.54</u>	.14						
F4 of 5						-.08	-.42	<u>-.34</u>	-.23	-.33						
F5 of 5						-.11	.01	-.22	-.40	<u>-.07</u>						
F1 of 6											.18	.33	.75	.46	.03	<u>.71</u>
F2 of 6											-.75	<u>-.63</u>	-.26	-.15	-.15	-.05
F3 of 6											-.32	-.61	<u>-.42</u>	.11	.20	.07
F4 of 6											-.15	-.03	-.21	<u>-.61</u>	-.16	-.35
F5 of 6											-.06	-.06	.18	-.08	<u>-.47</u>	-.02
F6 of 6											<u>.22</u>	-.11	-.01	.24	.00	-.05

Note. Varimax rotation, “psychological broad” variable selection (164 terms). F = Factor, B2S = Big Two social self-regulation, B2D = Big Two dynamism, PC3A= Pan-Cultural Three affiliation, PC3D = Pan-Cultural Three dynamism, PC3O = Pan-Cultural Three order, B5C = Big Five conscientiousness, B5A = Big Five agreeableness, B5ES = Big Five emotional stability, B5E = Big Five extraversion, B5I = Big Five intellect, B6C = Big Six conscientiousness, B6H = Big Six honesty, humility, propriety, B6A = Big Six agreeableness, B6ES = Big Six emotionality vs. resiliency, B6E = Big Six extraversion, B6O = Big Six openness or originality. Correlations $\geq .50$ in magnitude are bolded for emphasis. The best match correlations (relying on a joint PCA of the scales and factor scores) are underlined. The average best match correlations by model: Big Two, .68; Pan-Cultural Three, .43; Big Five, .51; Big Six, .51.

Table S7

Correlations between Supyire-Senufo Factors and etic marker scales, all targets (N=211) ipsatized data and raw data (*in italics*)

	B2S	B2D	PC3A	PC3D	PC3O	B5C	B5A	B5ES	B5E	B5I	B6C	B6H	B6A	B6E S	B6 E	B6 O
F1 of 2	<u>-.57</u>	<u>-.73</u>														
	<i>-.49</i>	<i>-.05</i>														
F2 of 2	<u>-.74</u>	<i>-.03</i>														
	<i>.78</i>	<u>.81</u>														
F1 of 3			<u>-.79</u>	<i>-.40</i>	<u>-.52</u>											
			<i>-.45</i>	<i>-.07</i>	<u>-.12</u>											
F2 of 3			<i>-.14</i>	<u>-.39</u>	<i>-.15</i>											
			<u>.82</u>	<u>.55</u>	<u>.57</u>											
F3 of 3			<i>-.43</i>	<i>.20</i>	<u>.16</u>											
			<i>.16</i>	<u>-.37</u>	<i>-.13</i>											
F1 of 5						<u>-.65</u>	<u>-.51</u>	<i>-.40</i>	<i>.00</i>	<i>-.22</i>						
						<u>-.74</u>	<i>-.18</i>	<i>-.48</i>	<i>.06</i>	<i>.03</i>						
F2 of 5						<i>-.17</i>	<u>-.58</u>	<i>-.40</i>	<i>-.28</i>	<i>-.32</i>						
						<i>.38</i>	<u>.74</u>	<i>.18</i>	<i>.35</i>	<i>.57</i>						
F3 of 5						<i>.09</i>	<i>-.32</i>	<u>-.38</u>	<i>.22</i>	<i>-.15</i>						
						<i>.03</i>	<i>-.15</i>	<i>-.36</i>	<u>.62</u>	<i>.17</i>						
F4 of 5						<i>.31</i>	<i>.01</i>	<i>.24</i>	<u>.53</u>	<i>.33</i>						
						<i>-.24</i>	<i>-.38</i>	<u>-.45</u>	<i>-.27</i>	<i>-.26</i>						
F5 of 5						<i>-.46</i>	<i>-.01</i>	<i>-.15</i>	<i>-.18</i>	<u>-.03</u>						
						<i>-.23</i>	<i>.12</i>	<i>-.28</i>	<i>-.08</i>	<u>-.08</u>						
F1 of 6											<i>-.43</i>	<u>-.65</u>	<u>-.60</u>	<i>-.07</i>	<i>.06</i>	<i>-.21</i>
											<u>-.68</u>	<u>-.74</u>	<i>-.33</i>	<i>-.06</i>	<i>-.13</i>	<i>-.01</i>
F2 of 6											<i>-.05</i>	<u>-.52</u>	<u>-.53</u>	<i>-.12</i>	<i>.03</i>	<i>-.29</i>
											<i>.24</i>	<i>.32</i>	<u>.74</u>	<u>.54</u>	<i>.07</i>	<u>.70</u>
F3 of 6											<i>-.18</i>	<i>-.11</i>	<i>-.34</i>	<u>-.61</u>	<i>-.05</i>	<i>-.34</i>

	-.26	-.39	<u>-.41</u>	.14	.27	.13
F4 of 6	-.43	-.36	-.12	-.17	-.38	<u>-.43</u>
	-.24	-.12	-.18	<u>-.56</u>	-.25	-.25
F5 of 6	-.13	-.07	-.29	.04	<u>.35</u>	.13
	-.16	-.17	.18	.06	<u>-.39</u>	-.08
F6 of 6	<u>-.44</u>	-.02	-.03	-.45	-.13	-.05
	<u>.30</u>	-.24	-.07	.26	.11	.05

Note. Varimax rotation, “psychological broad” variable selection (164 terms). F = Factor, B2S = Big Two social self-regulation, B2D = Big Two dynamism, PC3A= Pan-Cultural Three affiliation, PC3D = Pan-Cultural Three dynamism, PC3O = Pan-Cultural Three order, B5C = Big Five conscientiousness, B5A = Big Five agreeableness, B5ES = Big Five emotional stability, B5E = Big Five extraversion, B5I = Big Five intellect, B6C = Big Six conscientiousness, B6H = Big Six honesty, humility, propriety, B6A = Big Six agreeableness, B6ES = Big Six emotionality vs. resiliency, B6E = Big Six extraversion, B6O = Big Six openness or originality. Correlations $\geq .50$ in magnitude are bolded for emphasis. The best match correlations (relying on a joint PCA of the scales and factor scores) are underlined. The average best match correlations by model, ipsatized data: Big Two, .74; Pan-Cultural Three, .45; Big Five, .43; Big Six, .50. The average best match correlations by model, raw data: Big Two, .65; Pan-Cultural Three, .44; Big Five, .53; Big Six, .52.

Table S8

Congruence Coefficients (Tucker's-Phi) after Target Rotation of Correlations between Marker Scales for Etic models and Emic Factors

Etic Model							Average	
Maasai								
Big Two	.78	.85					.81	
Pan-Cultural Three	.72	.67	.59					.66
Big Five	.71	.71	.63	.71	.62			.67
Big Six	.40	.59	.67	.60	.70	.57		.59
Supyire-Senufo								
Big Two	.89	.92					.91	
Pan-Cultural Three	.96	.73	.86					.85
Big Five	.71	.71	.63	.71	.62			.67
Big Six	.78	.92	.67	.86	.87	.75		.81

Note. A procrustes rotation protocol in R package 'paramap' (O'Connor, 2018) was used to compare the Pearson correlations reported in Tables 3 and 6 to the target models (a matrix of 0s with 1, or -1 to identify the underlined correlation).

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